CUMULATIVE IMPACTS ASSESSMENT
Northstar Enhancement THP
Section IV

14 CCR 932.9 (1): Do the assessment area(s) of resources that may be affected by the proposed project contain any past, present, or reasonably foreseeable probable future projects? If yes, identify the projects and affected resource areas:

Yes __X__ No ____

See THP Section IV discussion titled "*PAST/PRESENT/FORESEEABLE FUTURE PROJECTS*" for information regarding past, present, and future projects within the assessment area.

14 CCR 932.9 (2) Are there any continuing, significant adverse impacts from past land use activities that may add to the impacts of the proposed project? If the answer is yes, identify the activities, describing their location, impacts and affected resource subject(s).

Yes ____ No __X__

14 CCR 932.9 (3): Will the proposed project, as presented, in combination with past, present, and reasonably foreseeable future projects identified in (1) and (2) above, have a reasonable potential to cause or add to significant cumulative impacts in any of the following resource subjects?

	Yes After Mitigation (a)	No after mitigation	No reasonably potential significant effects (c)
1. Watershed			X
2. Soil Productivity			X
3. Biological		X	
4. Recreation			X
5. Visual			X
6. Traffic			X
7. Other (Climate Change)			X

14 CCR 932.9(4) If column (b) is checked in (3) above describe what mitigation measures have been selected which will substantially reduce or avoid reasonably potential significant cumulative impacts except for those mitigation measures or alternatives mandated by application of rules of the Board.

See discussion titled "Biological Resources Assessment" located in THP Section IV.

Section IV con't:

14 CCR 932.9 (5) Provide a brief description of the assessment area used for each resource subject:

RESOURCE AREA DESCRIPTIONS:

This analysis will evaluate any reasonably identifiable activity that has occurred during the ten year planning period beginning in June 2005. This analysis will consider both on and off-site interactions with identifiable impacts of past and foreseeable future projects.

Watershed Assessment Area
The Watershed Assessment Area (WAA) boundary was established to encompass sufficient area to analyze all past, present, and future actions, along with natural occurring events that, when combined with the proposed harvest plan, could cumulatively impact the environment within the assessment area. As shown on the WAA map, the assessment area contains Schaeffer Creek, West Martis Creek, West Fork of West Martis Creek, and Middle Martis Creek. Martis Creek forms the northern boundary of the WAA. The 7,751-acre Assessment Area drains into Martis Creek Reservoir and ultimately, the Truckee River.

Though the standard CalWater v2.2 Planning Watershed includes land northwest of Martis Creek, such as the airport and the southern portion of Truckee, the RPF chose Martis Creek as the northern WAA boundary. By doing so, Martis Creek forms a natural watershed boundary that includes the plan area, approximately 7,751 surrounding acres, and multiple drainages. By using the proposed Assessment Area, the presence of cumulative impacts related to the proposed THP can be reasonably evaluated with respect to the beneficial uses of water.

Soil Productivity Assessment Area
The cumulative soil productivity impacts assessment area is the proposed THP area. This assessment area will allow for reasonable evaluation of cumulative impacts of the proposed timber harvest in respect to the past, present, and future land management practices and actions.

Biological Resources Assessment Area

The Biological Assessment Area (BAA) is a 16, 932 acre area bound by Martis Valley to the North, Tahoe Vista and Carnelian Bay to the south, and Sawtooth Ridge to the west. The BAA was developed to incorporate the geographical area where impacts to biological resources as a result of the proposed timber operations could be anticipated.

Recreational Resources Assessment Area
The Recreational Resources Assessment Area is the THP area plus 300 feet beyond the THP area in all directions.

Visual Resource Assessment Area
The area utilized for the Visual Resource Assessment is the logging area that is readily visible to significant numbers of people who are within three miles of the THP area.

Vehicular Resources Assessment Area
The Traffic Assessment Area is the area that involves the first roads not part of the logging area on which logging traffic must travel. Log trucks exiting the THP area will immediately enter State Highway 267. Logs will be hauled north on Highway 267 towards Interstate-80, with likely destinations of either Lincoln or Quincy, California.

PAST/PRESENT/FORESEEABLE FUTURE PROJECTS/ACTIVITIES

Past Projects/Activities:

General land use activities within the cumulative impacts assessment area include primarily recreation, residential development, commercial development, and management of timber, watershed, and wildlife resources. Within the 7,751 acre CAA, private ownership accounts for over 90% of all landholdings, with lesser proportions held by the federal government.

Approved THPs on land owned by the various Timberland Owners of Record within the CIAA since 2005 are listed below. See AB47 Map for THP locations and silvicultural prescriptions.

LANDOWNER(S)	SILVICULTURE	ACRES	THP #
CNL Income Northstar LLC	CONV	68.2	2-05-024-PLA
Trimont Land Co, CNL Income Northstar LLC	CONV	26.8	2-05-026-PLA
CNL Income Northstar LLC	CONV	13.9	2-05-019-PLA
CNL Income Northstar LLC	CONV	20.3	2-05-024-PLA
CNL Income Northstar LLC	CONV	23.8	2-05-019-PLA
CNL Income Northstar LLC	CONV	3.8	2-05-019-PLA
CNL Income Northstar LLC	CONV	4.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	10.9	2-05-019-PLA
CNL Income Northstar LLC	CONV	51.0	2-05-024-PLA
CNL Income Northstar LLC	CONV	11.8	2-05-024-PLA
CNL Income Northstar LLC	CONV	4.4	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.8	2-05-019-PLA
CNL Income Northstar LLC	CONV	1.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	82.0	2-05-019-PLA
CNL Income Northstar LLC	CONV	3.0	2-05-024-PLA
CNL Income Northstar LLC	CONV	0.4	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.2	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.6	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.6	2-05-019-PLA
CNL Income Northstar LLC	CONV	1.9	2-05-019-PLA
CNL Income Northstar LLC	CONV	3.6	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.4	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	2.5	2-05-019-PLA
CNL Income Northstar LLC	CONV	1.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	1.2	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.8	2-05-019-PLA
CNL Income Northstar LLC	CONV	2.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.6	2-05-019-PLA

CNL Income Northstar LLC	CONV	1.8	2-05-019-PLA
CNL Income Northstar LLC	CONV	3.3	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.6	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.9	2-05-019-PLA
CNL Income Northstar LLC	CONV	1.6	2-05-019-PLA
CNL Income Northstar LLC	CONV	5.8	2-05-019-PLA
CNL Income Northstar LLC	CONV	1.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	0.7	2-05-019-PLA
CNL Income Northstar LLC	CONV	2.5	2-05-019-PLA
CNL Income Northstar LLC	SLCN	85.7	2-08-017-PLA
CNL Income Northstar LLC	CMTH	26.9	2-08-017-PLA
Northstar Mountain Properties	CONV	45.41	2-08-054-PLA
CNL Income Northstar LLC	SASV	31.9	2-08-017-PLA
CNL Income Northstar LLC	CONV	0.5	2-09-008-PLA
CNL Income Northstar LLC	CONV	1.3	2-09-008-PLA
CNL Income Northstar LLC	CONV	0.4	2-09-008-PLA
CNL Income Northstar LLC	CONV	0.7	2-09-008-PLA
CNL Income Northstar LLC	CONV	70.6	2-09-008-PLA
CNL Income Northstar LLC	CONV	5.4	2-09-008-PLA
CNL Income Northstar LLC	CONV	0.1	2-09-014-PLA
CNL Income Northstar LLC	CONV	0.2	2-09-014-PLA
CNL Income Northstar LLC	CONV	0.1	2-09-014-PLA

CNL Income Northstar LLC	CONV	0.1	2-09-014-PLA
CNL Income Northstar LLC	CONV	0.4	2-09-014-PLA
CNL Income Northstar LLC	CONV	1.7	2-09-014-PLA
CNL Income Northstar LLC	CONV	0.1	2-09-014-PLA
CNL Income Northstar LLC	CONV	15.3	2-06-102-PLA
CNL Income Northstar LLC	CONV	2.0	2-09-020-PLA
CNL Income Northstar LLC	CONV	0.0	2-09-057-PLA
CNL Income Northstar LLC	CONV	0.1	2-09-057-PLA
CNL Income Northstar LLC	CONV	0.4	2-09-057-PLA
CNL Income Northstar LLC	CONV	4.6	2-09-057-PLA
CNL Income Northstar LLC	CONV	4.7	2-09-057-PLA
CNL Income Northstar LLC	SASV	7.6	2-08-017-PLA
CNL Income Northstar LLC	CONV	0.3	2-09-008-PLA
CNL Income Northstar LLC	CONV	0.2	2-09-008-PLA
CNL Income Northstar LLC	CONV	0.1	2-09-008-PLA
CNL Income Northstar LLC	CONV	0.2	2-09-008-PLA
CNL Income Northstar LLC	CONV	1.6	2-09-008-PLA
CNL Income Northstar LLC	SLCN	20.5	2-09-008-PLA
CNL Income Northstar LLC	SLCN	15.5	2-09-008-PLA
CNL Income Northstar LLC	SLCN	38.3	2-09-008-PLA
CNL Income Northstar LLC	SLCN	1.2	2-09-008-PLA
CNL Income Northstar LLC	SLCN	51.2	2-09-008-PLA
CNL Income Northstar LLC	SASV	33.6	2-09-008-PLA
CNL Income Northstar LLC	SLCN	35.0	2-09-008-PLA
CNL Income Northstar LLC	SLCN	36.6	2-09-008-PLA
CNL Income Northstar LLC	SLCN	15.3	2-09-008-PLA
CNL Income Northstar LLC	SASV	12.4	2-09-008-PLA
CNL Income Northstar LLC, Northstar Mountain Properties	CONV	69.3	2-11-015-PLA
Trimont Land Co.	SASV	282	2-15-041-PLA
Trimont Land Co.	CONV	18.4	2-15-041-PLA
TOTAL		**1257.1**	

KEY:
CONV = Timberland Conversion (Special Prescription)
SLCN = Selection (Unevenage Management)
SASV = Sanitation/Salvage (Intermediate Treatment)
CMTH = Commercial Thinning (Intermediate Treatment)

Within the Cumulative Impacts Assessment Area, approximately 1,257 acres, or 16% of the CIAA, have been covered under approved Timber Harvest Plans since 2005. As the CIAA contains a large portion of the Northstar ownership that is held for intensive ski resort development, timberland conversion has been the most frequently used silvicultural prescription within the CIAA. Of these conversions, residential subdivision, ski trail creation and widening, and clearing for associated infrastructure were the primary uses for the converted areas.

Northstar "S-POD" THP, #2-09-008-PLA:
This THP was originally written for 73 acres of Timberland Conversion to facilitate ski trail development, including a new lift to the "Backside" terrain, creation of new ski trails, widening of existing ski trails, and installation of new snow making equipment and required utility infrastructure. Timberland Conversion Permit #585 was associated with this THP. On March 9, 2011, this THP was amended to add 15.9 acres of Timberland Conversion, while deleting 17.2 acres of previously identified timberland conversion area. On May 20, 2011, this THP was amended to add 265 acres to the THP area, including 191 acres of Selection, 55 acres of Sanitation Salvage, and the use of 19 acres of non-timbered areas to facilitate timber operations. To date, a total of 115 acres of the THP has been harvested. This THP has been extended for the final 2-year extension in January 2016.

Various Grant Funded Fuels Reduction Projects
During 2010-2012, Northstar received grant funding to aid in reduction of hazardous fuels within its ownership. A total of 201 acres were treated to reduce hazardous fuels with financial assistance of the State sponsored grant funding. Most of these fuel reduction project occurred with the use of a Forest Fire Prevention Exemption when removal of commercial products was planned. No additional grants for fuels reduction have been received since 2012.

Various Non-Grant Funded Fuels Reduction Projects
Northstar California has completed approximately 161 acres of small scale fuels reduction projects at various locations within its ownership since 2005. These areas generally enhanced other existing or planned fuel reduction areas, or presented particular need according to landowner discretion. Commercial entries occurred under Cal Fire harvest documents during the years of 2005-2008. These projects may continue dependent upon funding.

Past Project/Activities Analysis:

As with many rural areas within the Sierra Nevada's, past historical activities such as logging, mining, and ranching have made changes to the natural environment. One of the results of past cultural practices was the creation of mechanisms that ensure land management practices will not have an adverse impact on the environment. Past projects within the assessment have had to comply with CEQA, NEPA, the California Forest Practice Rules, the Federal Threatened &Endangered Species Act, Central Valley Regional Water Quality Control Board regulations, as well as County regulations. As these agencies are charged with protecting specific natural resources in the interest of the public, it can be inferred that compliance with the aforementioned mechanisms has ensured environmental impact(s) from the past projects have not been significant, or have been mitigated to a level of no significance.

Present Projects/Activities:

Northstar Enhancement THP
This THP is intended to enhance various aspects of the forest resource within the greater Northstar California ownership. Silvicultural units include a combined 527 acres of sanitation/salvage, commercial thinning, and wet area and meadow restoration. Timber operations are expected to commence during the late summer of 2016 and continue through the valid term of the plan.

SPOD (2-09-008-PLA):
The S POD THP was originally approved on January 4, 2011. The THP has been extended to January 3, 2018. Approximately 220 acres of commercial thinning and sanitation/salvage units remain to be treated under this THP. Implementation of this THP's silvicultural prescriptions is planned for the summer months of 2016 and 2017.

Martis Valley West Parcel Project
A Timber Harvest Plan (THP) is underway to facilitate the rezoning of the "West Parcel", a 1,052-acre forested parcel that was historically used for timber production by Sierra Pacific Industries. The West Parcel is currently zoned Timberland Production Zone (TPZ), and now owned by Martis Valley West Development, LLC. Under the *Martis Valley West Parcel Specific Plan,* 662 acres of the West Parcel would be withdrawn from TPZ to facilitate residential development, while the remaining 417 acres will remain in TPZ. The 2003 Martis Valley Community Plan Update called for a total density allocation of 1,360 residential units and 6.6 acres of commercial on the neighboring "East Parcel". The Martis Valley West Parcel Specific Plan will transfer 760 residential units and 6.6 acres of commercial land use designations from the East Parcel to the West Parcel. This transfer will result in a maximum build out on the West Parcel of 760 residential units, with the remaining 600 residential units being retired. A Timber Harvest Plan and Timberland Conversion Permit for Subdivision are currently being prepared for this project. The beginning stages of project implementation are anticipated during 2016.

Northstar Highlands II Development
Portions of this phase of the Highlands II development remain under construction. This development is located on lands owned by Northstar Mountain Properties. During October 2010, approximately 5 acres of the Highlands II THP area received timber harvest activities in preparation for construction of single family residences. A partial completion report for the aforementioned acreage was submitted in December 2011. During October 2011, an additional 6 acres received timber harvest activities under and approved Amendment to the THP. This THP was closed out during 2012. Thereafter, construction activities for the development continued, and are scheduled to continue depending on market conditions. Non-LTO contractors, under the jurisdiction of Placer County Department of Public Works, will perform all required construction activities.

Northstar Highlands III Development
The Northstar Highlands III THP was prepared to facilitate 86.2 acres of tree removal required for the development of single family residences, associated infrastructure, and ski trails/skier access within the project area. This development is located on lands owned by Northstar Mountain Properties. The submittal of the Highlands III THP represented commencement of the first portion of the Highlands III development activities. Timber operations have occurred annually during the valid term of the THP to accommodate each year's construction activities. Conversion activities associated with the Northstar Highlands III THP will occur under Notice of Exemption for Timberland Conversion for Subdivision #11-001EX, approved on March 15, 2011 and expiring December 31, 2016.

Northstar California Habitat Management Plan
In February 2005, Judge James D. Garbolino of Placer County Superior Court issued a tentative decision stating that the Placer County Environmental Impact Report for the Martis Valley Community Plan was inadequate. Subsequently, the County was required to suspend all project approvals and activities that were based upon the Martis Valley Community Plan.

Present Projects/Activities, con't:

In June 2005, the "Northstar Developments" (the Village and Highlands projects, Mountain Improvements, the Retreat, Porcupine Hill, etc) were exempted from the February 2005 tentative decision by Judge Garbolino. As a result of a settlement in 2006, the project approval restriction was lifted and no longer in effect. In effort to mitigate biological impacts from the Northstar Developments, a condition of this exemption was that the Northstar landowners were to develop a Habitat Management Plan for their collective properties that would prohibit intensive land use of 90% of the 8,000 acre Northstar ownership. This condition also required that Northstar establish a transfer fee on retail transfers of residential property, which would be paid to a non-profit entity for use acquiring land in the Martis Valley for the purpose of preserving and/or managing open space.

Northstar-At-Tahoe Habitat Management Plan & Overall Mountain Master Plan
The Northstar California Habitat Management Plan (HMP) was completed in February 2009. As summarized from the HMP, the Plan was developed in the context of existing and planned future land uses at Northstar, and aims to balance future growth of the resort with maintenance of important natural resources values on Northstar lands. The HMP provides specific resource management guidance for land use and development of the Northstar property. Northstar is developing its Overall
Mountain Master Plan (OMMP), which will propose and describe a range of future land uses and resort expansion projects to be implemented over the next 20 or more years. Hence, the HMP will serve as a planning tool during development and implementation of the OMMP. It is intended to provide planning guidance at a programmatic level and assumes that more detailed project-level analyses will take place during the project-specific regulatory process. However, the HMP attempts to anticipate some of the major biological issues that would be identified during future environmental analyses, and includes practices for upfront minimization or avoidance of several potential adverse effects. Also, the HMP includes a habitat enhancement plan which provides guidance and designated priority areas for habitat enhancement at Northstar.

The HMP is habitat-based; resources management objectives, targets, practices, and monitoring address the extent, location, and quality of target habitats (i.e., late-seral forest, aquatic, stream riparian, and meadow habitats) and factors that affect those habitats. The HMP planning area is the entire Northstar California™ property, though the HMP separates the Northstar ownership into five land use and resource management zones. These zones establish the types of land uses that will be allowed and the general natural resources management requirements within each zone.

Zones A: Developed Community, 1583 acres
Zone B: Intensive Ski Area Development, 2430 acres
Zone C: Intensive Recreation Use Area, 894 acres
Zone D: Recreation Use/Habitat Conservation Area 902 acres
Zone E: Habitat Conservation Area, 1964 acres

For each zone, one or more objectives describe the desired outcome or the given area. The objectives are intended to guide the selection of targets, the development and implementation of design and management practices, and the adaptive management process. These objectives are based on existing conditions, current and planned uses, and other key planning considerations described in previous chapters of the HMP. All land management activities occurring at Northstar, other than privately owned residential parcels, will be under the jurisdiction of the HMP during all phases of project implementation.

Though the OMMP identifies several components of ski trail widening and creation, the ski trails will be constructed over the next two decades or more, and will occur in phases associated with individual ski pods on the mountain. Specific dates and locations of OMMP phased implementation are not yet know. However, the Northstar Mountain Master Plan Final Environmental Impact Report (State Clearinghouse NO. 2012112020) is the CEQA document for the OMMP, and contains the project-specific mitigations that will be adhered to during any future project implementation.

U.S. Forest Service Present Projects
The CIAA includes lands of the Truckee Ranger District (TRD) of the Tahoe National Forest (TNF). The TRD of the TNF 2015 *Schedule of Proposed Actions* (SOPA) indicated that analysis of the following projects are underway on US Forest Service lands within the CIAA:

Big Blue Adventures Recreation Event: A two day event, 100 mile mountain bike event followed by foot race the next day, utilizing 12 miles of National Forest System roads and trails, including the "06" road. This event will occur under special use permit that is valid for a 5 year period. The planning status of this event is indicated as currently "on hold".

Sierra Nevada Forest Plan Amendment (SNFPA): This action will prepare a narrowly focused analysis to comply with two orders issued by the Eastern District Court of California on November 4, 2009, as well as correcting the 2004 SNFPA Final SEIS to address range of alternatives and analytical consistency issues. The planning status of this action is currently listed as "on hold".

2017 Motor Vehicle Use Map (MVUM) Update: An Environmental Assessment is being completed to address Motor Vehicle Use map changes within the Tahoe National Forest. Scoping for this action is underway, with a decision expected by 9/2016.

Tahoe National Forest Over-snow Vehicle Use Designation: An Environmental Impact Statement is being completed to address over-the-snow vehicle use on roads and trails within the Tahoe National Forest. The Drafy EIS will be in the Federal Register 1/2016 with a decision by the Forest expected during 10/2106.

Present Projects Analysis

Implementation of the Northstar Enhancement THP as well as completion of existing conversion and development activities can be expected to continue on lands owned and controlled by the Timberland Owners of Record. The mandates of the Lahontan Regional Water Quality Control Board and Placer County will have positive impacts to biological and water resources of the assessment area. Further, future projects within the assessment are will have to comply with the applicable regulations of CEQA, the California Forest Practice Rules, the Federal Threatened &Endangered Species Act, Lahontan Regional Water Quality Control Board regulations, and/or Placer County regulations. As these agencies are charged with protecting specific natural resources in the interest of the public, it can be inferred that compliance with the aforementioned mechanisms will ensure environmental impact(s) from future project will be appropriately mitigated.

Foreseeable Future Projects/Activities:

Forest Flyer THP

The Forest Flyer THP proposes timberland conversion on 2.5 acres to facilitate construction of the "Forest Flyer" all weather toboggan facility within the Northstar California ownership. A Timberland Conversion Permit will be prepared and submitted concurrent with the THP submittal. Northstar California submitted an Environmental Questionnaire to the Placer County Community Resources Development Agency on February 15, 2013 regarding the Forest Flyer project. County-level approval of CEQA documents for this project are still underway. Upon final approval by Placer County, the THP will be submitted with timber operations commencing during the valid term of the THP.

Logger's Widening THP

The Logger's Widening THP will propose up to four acres of timberland conversion to widen an existing ski run. A Timberland Conversion Permit will be prepared and submitted concurrent with the THP submittal. County level approval of this project is anticipated during the spring of 2016, with THP and TCP submittal also planned for spring 2016.

Northstar Highlands II:

Highlands II, upon full build-out, will include a residential subdivision of condominiums and townhomes, employee housing, a church site, and relocation of the existing mountain maintenance facility. Timber operations occurred during October 2010 and October 2011, and this THP has been closed out. Though no additional timber operations are necessary for this project, construction will continue to full build-out as market conditions allow.

Northstar Highlands III:

The Northstar Highlands III THP was prepared to facilitate 86.25 acres of tree removal required for the development of single family residences, associated infrastructure, and ski trails/skier access within the project area. A *Notice of Exemption from Timberland Conversion for Subdivision Permit* #11-001EX, was approved for the THP area and will expire February 1, 2016. It can be anticipated that timberland conversion activities under this THP will occur through 2018, with associated construction activities occurring annually upon conclusion of timber operations.

Northstar Enhancement THP – Future Amendment Areas

Within the valid term of this THP, additional commercial thinning, sanitation/salvage, and/or meadow & wet area restoration may be amended into the Plan. Specific prospective areas of amendment have been identified on the Future Activities Map. These areas are largely concentrated in Zones E2 and E3. Field reconnaissance of these areas will continue dependent upon funding during the valid term of this THP. If potential amendment areas are found to be feasible, they will be amended into the Plan at the discretion of the Timberland Owner. Areas depicted on the Future Activities Map are estimated locations only, and the depicted areas may be increased or decreased in size, as well as additional areas amended in depending on the results of field reconnaissance. The Cumulative Impacts Assessment Area for this THP has been designed to accommodate flexibility in determination of the exact amendment areas. The specific date of any future amendment is unknown at this time.

Northstar California Overall Mountain Master Plan

As contained within the Northstar California Overall Mountain Master Plan, "....the Northstar Mountain Master Plan proposes new ski terrain, lifts, skier facilities and additional recreational opportunities, as well as upgrades to existing ski terrain and facilities. It was developed using environmental principles and management strategies established in Northstar's Habitat Management Plan (HMP), a resource management guide that was developed in collaboration with the local environmental community to conserve and enhance the natural resource values of Northstar lands while allowing for current and planned future land uses in a manner that is compatible with those values. As of 2015, Placer County has granted an off-calendar continuance for this project.

Placer County Legacy Open Space and Agricultural Conservation Program

The Placer Legacy Open Space and Agricultural Conservation Program is a program designed to protect and conserve open space and agricultural lands in Placer County. The primary objectives of the Legacy Program are:

1) Maintain a viable agricultural segment of the economy;
2) Conserve natural features necessary for access to a variety of outdoor recreation opportunities;
3) Retain important scenic and historic areas;
4) Preserve the diversity of plant and animal communities;
5) Protect endangered and other special status plant and animal species;
6) Separate urban areas into distinct communities; and
7) Ensure public safety.

It can be inferred all future projects within the CIAA that are permitted by Placer County will have to comply with the provisions and objectives of the Program.

Potential Grant Areas

During 2012, the RPF prepared a Grant Scoping Document for the Timberland Owner. The purpose of this report is to provide Northstar California planners and consultants with preliminary information regarding where to apply hazardous fuels reduction within the Northstar ownership. Ultimately, this information will identify forested areas in need of hazardous fuels reduction which may be eligible for future grant funding. Northstar currently utilizes this document to identify annual fuel reduction treatment areas, and to guide grant application efforts. Some the areas identified as potential grant areas may overlap with future amendment areas described above. Implementation of treatment of future grant funded areas is dependent on funding and environmental compliance needed, hence specific timeframes are unknown at this time.

The Martis Valley Community Plan (MVCP)

This Plan, in combination with the Placer County General Plan, provides overall direction for future growth within Martis Valley. Adopted by Placer County in December 2003, the MVCP specifies the goals, policies, guidelines, and standards, and implementation measures that will guide the development of Martis Valley to year 2020. The MVCP allows for construction of 8,600 new residential units, planned to accommodate approximately 21,500 new residents, if population growth occurs at the maximum anticipated rate. The number of new residential units allowed within Martis Valley was largely based on the amount of land permitted for development, thereby addressing both growth and environmental concerns.

Martis Creek Lake Reservoir

The US Army Corp of Engineers will continue to manage Martis Creek Reservoir for flood control and water supply as originally mandated by the Flood Control Act of 1962. The management of the subject Lake and Dam is described in the

Foreseeable Future Projects/Activities, con't:

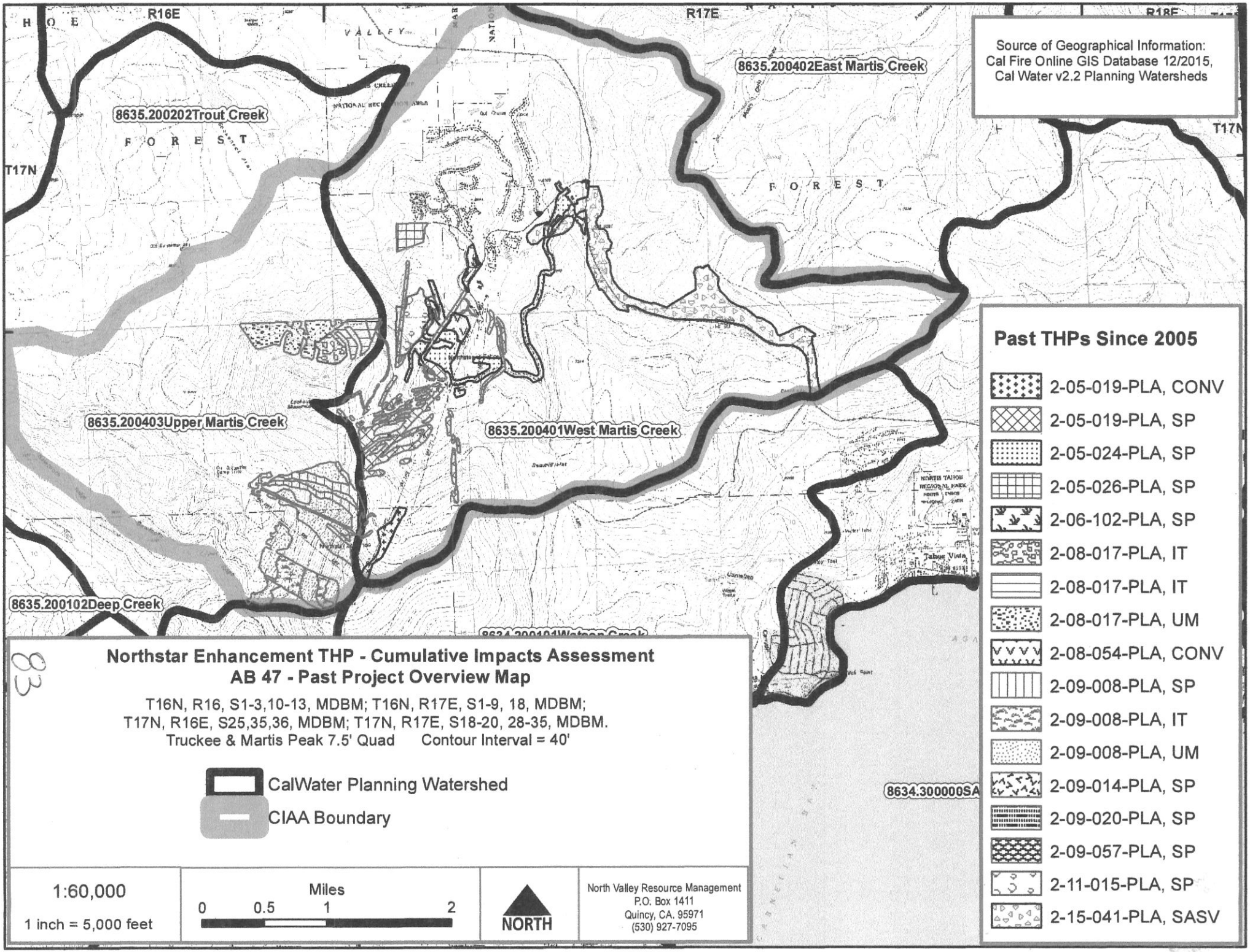
"Martis Creek Lake and Dam Draft Master Plan Update" released in November 2014. The Master Plan is the basic guidance document outlining the responsibilities of Corps pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands and associated resources. The Plan states that until the demand for water supply exists, the Lake will continue to function for the primary purpose of flood control. Additionally, the lands and water of the Martis Creek Lake and Dam Project are administered and managed to provide enjoyable recreation opportunities for the public in a manner that will best utilize and protect the resources of the project. Based on past recreation use surveys the Martis Creek Lake and Dam Project has a 5-month recreation season between April and August. The Army Corp of Engineers will continue to manage Martis Creek Lake as per the guidance set forth in the Master Plan Update.

U.S. Forest Service Future Projects
The CIAA includes lands of the Truckee Ranger District (TRD) of the Tahoe National Forest (TNF). The TRD of the TNF 2015 *Schedule of Proposed Actions* (SOPA) indicated a single proposed event that may occur within the CIAA. Big Blue Adventures is proposing a two-day, 100 mile mountain bike event followed by a foot race. Though the stated use of Tahoe National Forest Roads would be largely within the Lake Tahoe Basin Management Unit outside of the CIAA, the current SOPA indicates most of the event would occur on the Forest Road 06. The subject road would not be utilized or otherwise impacted as part of the proposed timber operations; hence impacts to this planned event as part of this THP are not anticipated.

The results of other US Forest Service actions, as identified in the Present Projects section, are unknown pending results of scoping, planning, and decision at the Federal level.

Truckee River Watershed Council
The Truckee River Watershed Council identifies, coordinates, funds, and implements restoration prevention and monitoring projects directly related to the integrity of the Truckee River. Current review of the website indicates that in 2011, they completed the Martis Creek Watershed Assessment, which identified and prioritized restoration projects within the Martis Creek Watershed. Based on that Assessment, the TRWC will be moving forward with project design for two separate restoration projects on Middle Martis Creek.

Future Projects Analysis
The mandates of Placer County, as described above, will have positive impacts to biological and water resources of the assessment area. Further, future projects within the assessment are will have to comply with CEQA, NEPA, the California Forest Practice Rules, the Federal Threatened & Endangered Species Act, Lahontan Regional Water Quality Control Board regulations, and Placer County regulations. As these agencies are charged with protecting specific natural resources in the interest of the public, it can be inferred that compliance with the aforementioned mechanisms will ensure environmental impact(s) from future project will not be significant, or will be mitigated to a level of less than significant.


R16E
R17E
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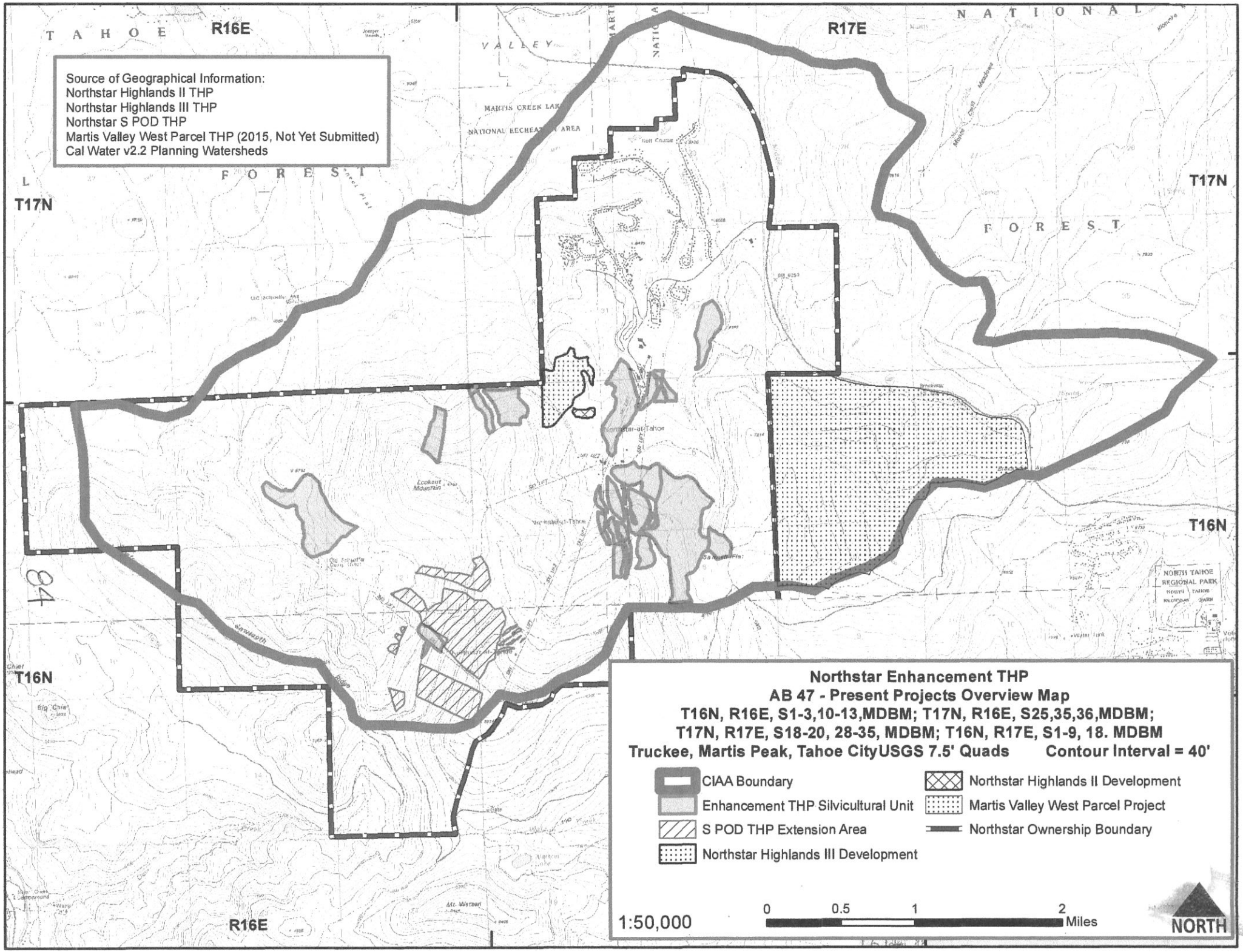
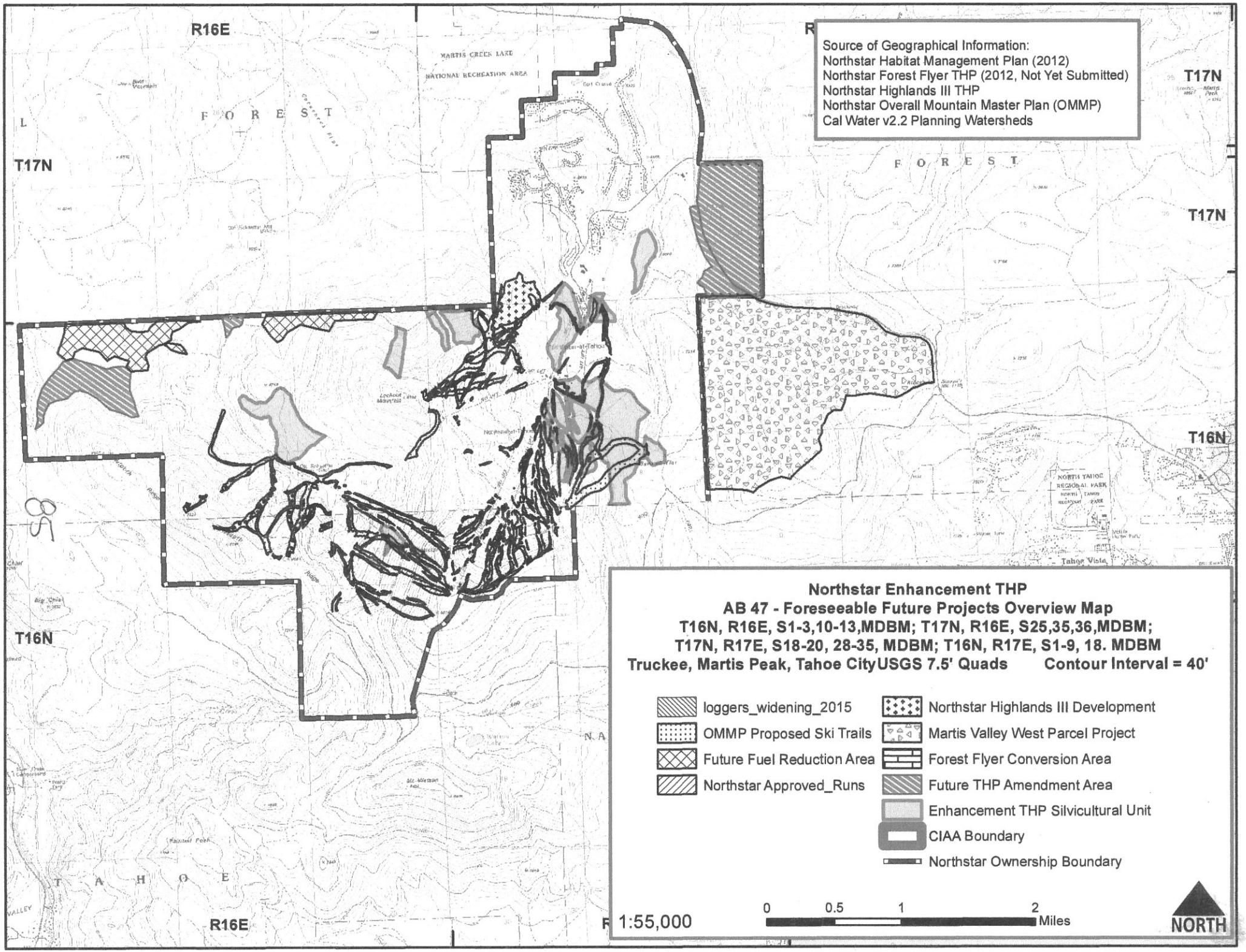
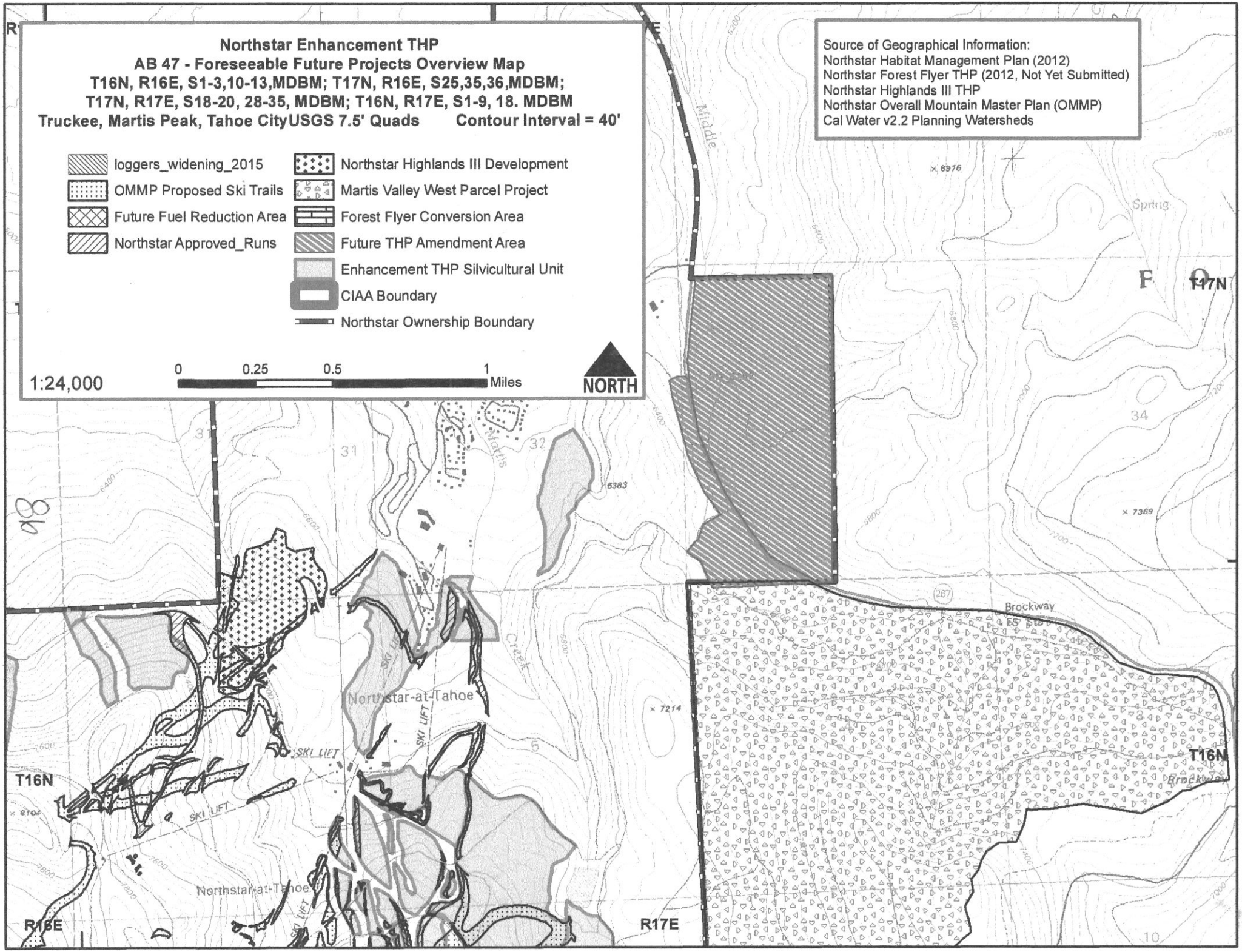
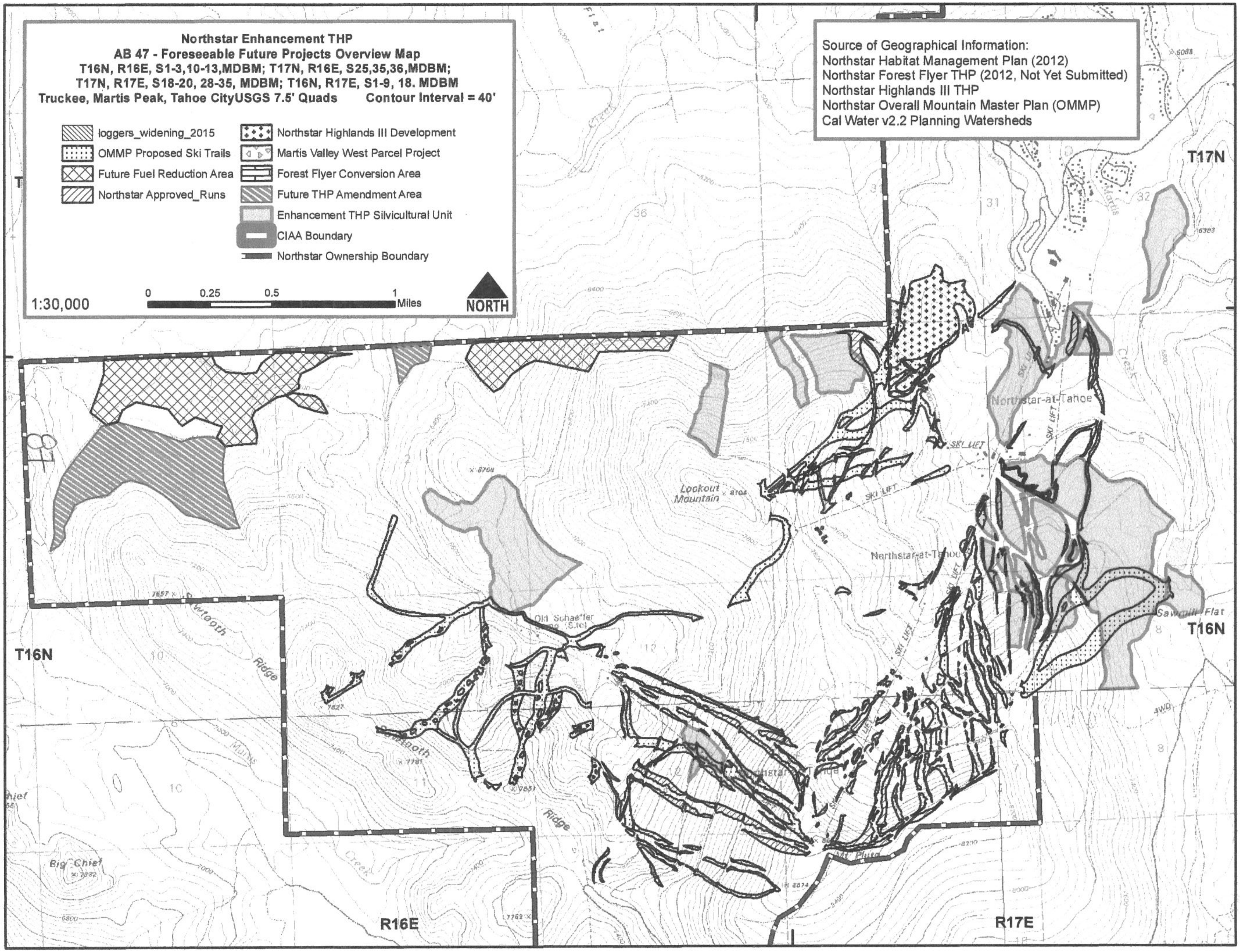
T17N
8635.200202Trout Creek
8635.200402East Martis Creek
8635.200403Upper Martis Creek
8635.200401West Martis Creek
8635.200102Deep Creek
8634.300000SA
Source of Geographical Information:
Cal Fire Online GIS Database 12/2015,
Cal Water v2.2 Planning Watersheds
Past THPs Since 2005
2-05-019-PLA, CONV
2-05-019-PLA, SP
2-05-024-PLA, SP
2-05-026-PLA, SP
2-06-102-PLA, SP
2-08-017-PLA, IT
2-08-017-PLA, IT
2-08-017-PLA, UM
2-08-054-PLA, CONV
2-09-008-PLA, SP
2-09-008-PLA, IT
2-09-008-PLA, UM
2-09-014-PLA, SP
2-09-020-PLA, SP
2-09-057-PLA, SP
2-11-015-PLA, SP
2-15-041-PLA, SASV
Northstar Enhancement THP - Cumulative Impacts Assessment
AB 47 - Past Project Overview Map
T16N, R16, S1-3,10-13, MDBM; T16N, R17E, S1-9, 18, MDBM;
T17N, R16E, S25,35,36, MDBM; T17N, R17E, S18-20, 28-35, MDBM.
Truckee & Martis Peak 7.5' Quad Contour Interval = 40'
CalWater Planning Watershed
CIAA Boundary
1:60,000
1 inch = 5,000 feet
Miles
0 0.5 1 2
NORTH
North Valley Resource Management
P.O. Box 1411
Quincy, CA. 95971
(530) 927-7095


Source of Geographical Information:
Northstar Highlands II THP
Northstar Highlands III THP
Northstar S POD THP
Martis Valley West Parcel THP (2015, Not Yet Submitted)
Cal Water v2.2 Planning Watersheds
R16E
R17E
T17N
T16N
T16N
R16E
Northstar Enhancement THP
AB 47 - Present Projects Overview Map
T16N, R16E, S1-3,10-13,MDBM; T17N, R16E, S25,35,36,MDBM;
T17N, R17E, S18-20, 28-35, MDBM; T16N, R17E, S1-9, 18. MDBM
Truckee, Martis Peak, Tahoe CityUSGS 7.5' Quads Contour Interval = 40'
CIAA Boundary
Enhancement THP Silvicultural Unit
S POD THP Extension Area
Northstar Highlands III Development
Northstar Highlands II Development
Martis Valley West Parcel Project
Northstar Ownership Boundary
1:50,000
0 0.5 1 2 Miles
NORTH


R16E
T17N
T16N
MARTIS CREEK LAKE
NATIONAL RECREATION AREA
F O R E S T
Source of Geographical Information:
Northstar Habitat Management Plan (2012)
Northstar Forest Flyer THP (2012, Not Yet Submitted)
Northstar Highlands III THP
Northstar Overall Mountain Master Plan (OMMP)
Cal Water v2.2 Planning Watersheds
Northstar Enhancement THP
AB 47 - Foreseeable Future Projects Overview Map
T16N, R16E, S1-3,10-13,MDBM; T17N, R16E, S25,35,36,MDBM;
T17N, R17E, S18-20, 28-35, MDBM; T16N, R17E, S1-9, 18. MDBM
Truckee, Martis Peak, Tahoe CityUSGS 7.5' Quads Contour Interval = 40'
loggers_widening_2015
OMMP Proposed Ski Trails
Future Fuel Reduction Area
Northstar Approved_Runs
Northstar Highlands III Development
Martis Valley West Parcel Project
Forest Flyer Conversion Area
Future THP Amendment Area
Enhancement THP Silvicultural Unit
CIAA Boundary
Northstar Ownership Boundary
1:55,000
0 0.5 1 2
Miles
NORTH


Northstar Enhancement THP
AB 47 - Foreseeable Future Projects Overview Map
T16N, R16E, S1-3,10-13,MDBM; T17N, R16E, S25,35,36,MDBM;
T17N, R17E, S18-20, 28-35, MDBM; T16N, R17E, S1-9, 18. MDBM
Truckee, Martis Peak, Tahoe CityUSGS 7.5' Quads Contour Interval = 40'
loggers_widening_2015
OMMP Proposed Ski Trails
Future Fuel Reduction Area
Northstar Approved_Runs
Northstar Highlands III Development
Martis Valley West Parcel Project
Forest Flyer Conversion Area
Future THP Amendment Area
Enhancement THP Silvicultural Unit
CIAA Boundary
Northstar Ownership Boundary
1:24,000
0 0.25 0.5 1 Miles
NORTH
Source of Geographical Information:
Northstar Habitat Management Plan (2012)
Northstar Forest Flyer THP (2012, Not Yet Submitted)
Northstar Highlands III THP
Northstar Overall Mountain Master Plan (OMMP)
Cal Water v2.2 Planning Watersheds
Middle
Martis
Creek
Spring
Brockway
Northstar-at-Tahoe
SKI LIFT
T16N
T17N
R16E
R17E
6383
7214
6976
7369


Northstar Enhancement THP
AB 47 - Foreseeable Future Projects Overview Map
T16N, R16E, S1-3,10-13,MDBM; T17N, R16E, S25,35,36,MDBM;
T17N, R17E, S18-20, 28-35, MDBM; T16N, R17E, S1-9, 18. MDBM
Truckee, Martis Peak, Tahoe CityUSGS 7.5' Quads
Contour Interval = 40'
loggers_widening_2015
OMMP Proposed Ski Trails
Future Fuel Reduction Area
Northstar Approved_Runs
Northstar Highlands III Development
Martis Valley West Parcel Project
Forest Flyer Conversion Area
Future THP Amendment Area
Enhancement THP Silvicultural Unit
CIAA Boundary
Northstar Ownership Boundary
1:30,000
0
0.25
0.5
1
Miles
NORTH
Source of Geographical Information:
Northstar Habitat Management Plan (2012)
Northstar Forest Flyer THP (2012, Not Yet Submitted)
Northstar Highlands III THP
Northstar Overall Mountain Master Plan (OMMP)
Cal Water v2.2 Planning Watersheds
T17N
T16N
T16N
R16E
R17E
Lookout Mountain
Northstar-at-Tahoe
SKI LIFT
Sawmill Flat
Big Chief
Ridge
Creek

WATERSHED ASSESSMENT:

Steep mountain slopes of Sawtooth Ridge leading to a relatively flat basin floor characterize the watershed assessment area.. Elevations of the assessment area range from 5,840 feet at the Martis Valley Floor to 8,617 feet at Mt. Pluto. The dominant vegetation type within the assessment area is a blend of White Fir and Jeffrey Pine forest types. Sagebrush, greenleaf Manzanita, tobacco brush, and pinemat Manzanita are the predominant brush species.

The Watershed Assessment Area (WAA) contains Schaeffer Creek, West Martis Creek, West Fork of West Martis Creek, Middle Martis Creek, and Martis Creek which forms the northern boundary of the WAA.

The Water Quality Control Plan (Basin Plan) For The California Regional Water Quality Control Board Lahontan Region itemizes the following beneficial uses for Martis Creek and Martis Creek Reservoir, components of the Truckee River Hydrological Unit #635.20:

Municipal and Domestic Supply (MUN): Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR): Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.

Ground Water Recharge (GWR): Beneficial uses of waters used for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Navigation (NAV): Beneficial uses of waters used for shipping, travel, or other transportation by private, military, or commercial vessels.

Water Contact Recreation/Canoeing and Rafting (REC-1): Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-contact Water Recreation (REC-2): Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing,

Commercial and Sportfishing (COMM): Beneficial uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.

Cold Freshwater Habitat (COLD): Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Migration of Aquatic Organisms (MIGR): Beneficial uses of waters that support habitats necessary for migration, acclimatization between fresh and salt water, or temporary activities by aquatic organisms, such as anadromous fish.

WATERSHED ASSESSMENT, con't:

Rare, Threatened, or Endangered Species (RARE): Beneficial uses of waters that support habitat necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened or endangered.

Wildlife Habitat (WILD): Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Spawning, Reproduction, and Early Development (SPWN): Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

The assessment area is currently being used for summer and winter recreation, though commercial logging has a past in the assessment area. Multiple seasonal logging roads traverse the watershed. State Route 267, Northstar California ski resort, Highlands View Drive, and Northstar Drive are significant cultural features present in the watershed assessment area.

General Watercourse Discussion
Watercourse Condition
The watershed impacts of past upstream and on-site projects are often reflected in the condition of stream channels in the project area. Following is a list of channel characteristics and factors that may be used to describe current watershed conditions and to assist in the evaluation of potential project impacts.

Gravel Embedded - Spaces between stream gravel filled with sand or finer sediments. Gravels are often in a tightly packed arrangement. There is indication this activity occurring at a minor to moderate levels within each of the WAA watercourses.

Pools Filled - Former pools or apparent pool areas filled with sediments leaving few areas of deep or "quiet" water relative to stream flow or size. Watercourse evaluation at and surrounding the evaluation points indicates this activity is occurring at mild to moderate levels within Schaeffer Creek and portions of Martis Creek.

Aggrading - Stream channels filled or filling with sediment that raises the channel bottom elevation. Pools will be absent or greatly diminished and gravel may be embedded or covered by finer sediments. Streamside vegetation may be partially or completely buried, and the stream may be meandering or cutting into its banks above the level of the former streambed. Depositional areas in aggrading channels are often increasing in size and number. Watercourse evaluation at and surrounding the evaluation points indicates this activity is generally not occurring within the WAA watercourses.

Bank Cutting – This action is indicated by areas of fresh, unvegetated soil or alluvium exposed along the stream banks, usually above the low-flow channel and often with a vertical or undercut face. Severe bank cutting is often associated with channels that are downcutting, which can lead to over-steepened banks, or aggrading, which can cause the channel to migrate against slopes that were previously above the high flow level of the stream. Watercourse evaluation at and surrounding the evaluation points indicates this activity is generally not occurring within the WAA watercourses. However, West Martis Creek has an isolated occurrence of this activity just below Sawmill Reservoir, itemized as Significant Erosion Site #33 on the THP map.

Bank Mass Wasting - Channels with landslides directly entering the stream system are not present within the THP area or the WAA. Slide movement may be infrequent (single events) or frequent (continuing creep or periodic events). Past harvesting used ground based equipment across the entire plan area. Examination of existing skid trails

and areas of operations has not identified this type of activity. There is no indication this activity is occurring or will occur as a result of operations.

Downcutting - Incised stream channels with relatively clean, uncluttered beds cut below the level of former streamside vegetation and with eroded, often undercut or vertical, banks. This action is generally not occurring within the WAA watercourses. However, West Martis Creek has an isolated occurrence of this activity just below Sawmill Reservoir.

Scouring - Stream channels that have been stripped of gravel and finer bed materials by large flow events or debris torrents. Streamside vegetation has often been swept away, and the channel has a raw, eroded appearance. This action was not seen at or near the stream evaluation points.

Organic Debris. Debris in the watercourse can have either a positive or negative impact depending on the amount and stability of the material. Stable organic debris present in the watercourse may help to form pools and retard sediment transport and downcutting in small to medium sized streams with relatively steep gradients. Large accumulations of organic debris can block fish passage, block or divert stream flow, or could be released as a debris flow. Organic debris levels within the WAA watercourses appears to moderate, and generally not ample enough to be causing significant debris jams. Middle Martis Creek has moderate levels of large woody debris lying across and within the stream channel, encouraging meandering and braiding of the stream channel near the entrance to the THP area.

Stream-Side Vegetation: Stream-side vegetation and near-stream vegetation provide shade or cover to the stream, which may have an impact on water temperature, and provides root systems that stabilize stream banks and floodplains and filter sediment from flood flows. This resource has been impacted by past management actions and natural flood events. Though streamside vegetation of the upper reaches of the WAA watercourses is generally absent, downstream reaches appear to have ample riparian vegetation to provide stabilization, shade canopy, cover, and sediment filtering.

Recent Floods: A recent high flow event that would be considered unusual in the project area may have an impact on the current watercourse condition. Review of the watershed recourse indicates recent flooding has not significantly impacted the watercourses within the WAA.

Portions of West Martis Creek, West Fork Martis Creek, Middle Martis Creek, Schaffer Creek, and Martis Creek were evaluated for stream channel conditions. The locations of specific evaluation points are shown on the Watershed Assessment Area Map.

West Martis Creek: This Class I/III watercourse was examined at evaluation points B, C, and E, where the stream originated from Sawmill Flat Reservoir, and intersected Highlands View Drive and Northstar Drive, respectively. Channel substrate included native, angular boulders underlain by native sandy soils. At both evaluation points, channel gradient was approximately 5% or less. In the upstream reaches, riparian vegetation is generally absent, and conifer species form an even-aged overstory of canopy closures ranging from 20-50%. Down woody debris is minimal to moderate. Near its intersection with Northstar Drive, this watercourse exhibits significant riparian vegetation composed of willows, quaking aspen, and dense grasses. Large woody debris is present in the channel, helping maintain and encourage channel meanders. One plunge pool was observed at the Northstar Drive evaluation point. Evaluation findings indicate this watercourse is exhibiting moderate gravel embeddedness. This watercourse is not showing signs of significant pool filling, aggrading, downcutting, scour or similar features.

WATERSHED ASSESSMENT, con't:

West Fork West Martis Creek: This Class I/II watercourse was examined at evaluation point F, adjacent to the Northstar Village Parking Lot, as shown on the WAA map. Channel substrate included native angular cobbles and soil. Channel gradient was approximately less than 5%. Mild to moderate bank cutting appears to be occurring within the watercourse. Moderate aggradation is also apparent as gravels are moderately embedded and moderate pool filling is present.

Middle Martis Creek: This Class I watercourse was evaluated east of Highway 267 at points A and D on the WAA map. The channel has been moderately confined due to the presence of the highway, and is fairly well defined. Meanders are present. Riparian vegetation is moderately present, including thickets of alders, willows, and quaking aspen. Downcutting is evident at mild levels. Gravel embeddedness is moderate.

Martis Creek: This Class I watercourse was evaluated within the Martis Creek Wildlife Area, point G on the WAA map. Extensive willow is present along the meandering channel, and this creek system is known habitat for the Willow Flycatcher. Channel substrate is native cobbles and gravels. Slight bank cutting is evident. Gravel embeddedness is moderate and pool filling is slight.

Schaeffer Creek: This Class I watercourse was evaluated along the trail that runs the east side of the channel. Streamside vegetation consists mostly of conifer overstory and understory, with isolated occurrences of salix willow and mountain alder. Channel substrate is native cobbles and gravels. Slight pool filling and gravel embeddedness is evident.

Watershed Resource Concerns Within the Watershed Assessment Area

Middle Martis Creek is located immediately adjacent to State Route 267 in select reaches within the assessment area. Earthen fill associated with road maintenance activities may be able to enter Middle Martis Creek at locations outside of the THP area but within the Watershed Assessment Area. Water quality, fisheries habitat, and aquatic habitat could be affected by these inputs should they occur.

Watershed Resource Concerns Outside of the Watershed Assessment Area

The Truckee River is listed as a 303(d) watercourse. Though this river is located outside of the WAA boundary, it is downstream from the THP area and the WAA. The listed stressors for the Truckee River are sedimentation and siltation. The 303(d) list of water quality limited segments lists the following potential sources of sediment and siltation for the river: range grazing, silviculture, construction/land development, highway/road/bridge construction/stream bank modification/destabilization, channel erosion, erosion/siltation, natural sources, recreation al and tourism, snow skiing activities, and nonpoint source.

Potential Watershed Impacts of Northstar Enhancement THP

Impacts to the watershed could occur as a result of timber operations under the following scenarios: 1) inadequate protection of watercourses within or adjacent to the THP area could lead to increased water temperature and reduction of WLPZ/ELZ sediment filtration capability, 2) Increased runoff and subsequent sediment transport and delivery to watercourses within and/or adjacent to the plan area due to areas of exposed soil, 3) Debris jamming and alteration of water chemistry as a result of introduction of organic material into the WAA watercourses, 4) Impairment of the beneficial uses of water due to introduction of organic matter, changes in water temperature, alteration of water chemistry, and increased turbidity.

WATERSHED ASSESSMENT, con't:

Watershed Resource Mitigation Measures for Northstar Enhancement THP

Impacts to watershed resources within the WAA are not expected as a result of timber operations. The following mitigation measures have been incorporated into the Timber Harvest Plan to ensure that watercourse condition and beneficial uses of water are not impacted by the Northstar Enhancement THP:

1) The California Forest Practice Rules will be adhered to during all phases of timber operations. By doing so, the THP will meet the intent of 14 CCR Article 6 by ensuring that the beneficial uses of water, native aquatic and riparian species, and the beneficial functions of riparian zones are protected from potentially significant adverse site specific and cumulative impacts associated with timber operations. Specifically, during timber operations the LTO shall not place, discharge, or dispose of or deposit in such a manner as to permit to pass into the waters of the state, and substances or materials, including but not limited to soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water, as per 14 CCR 936(1).

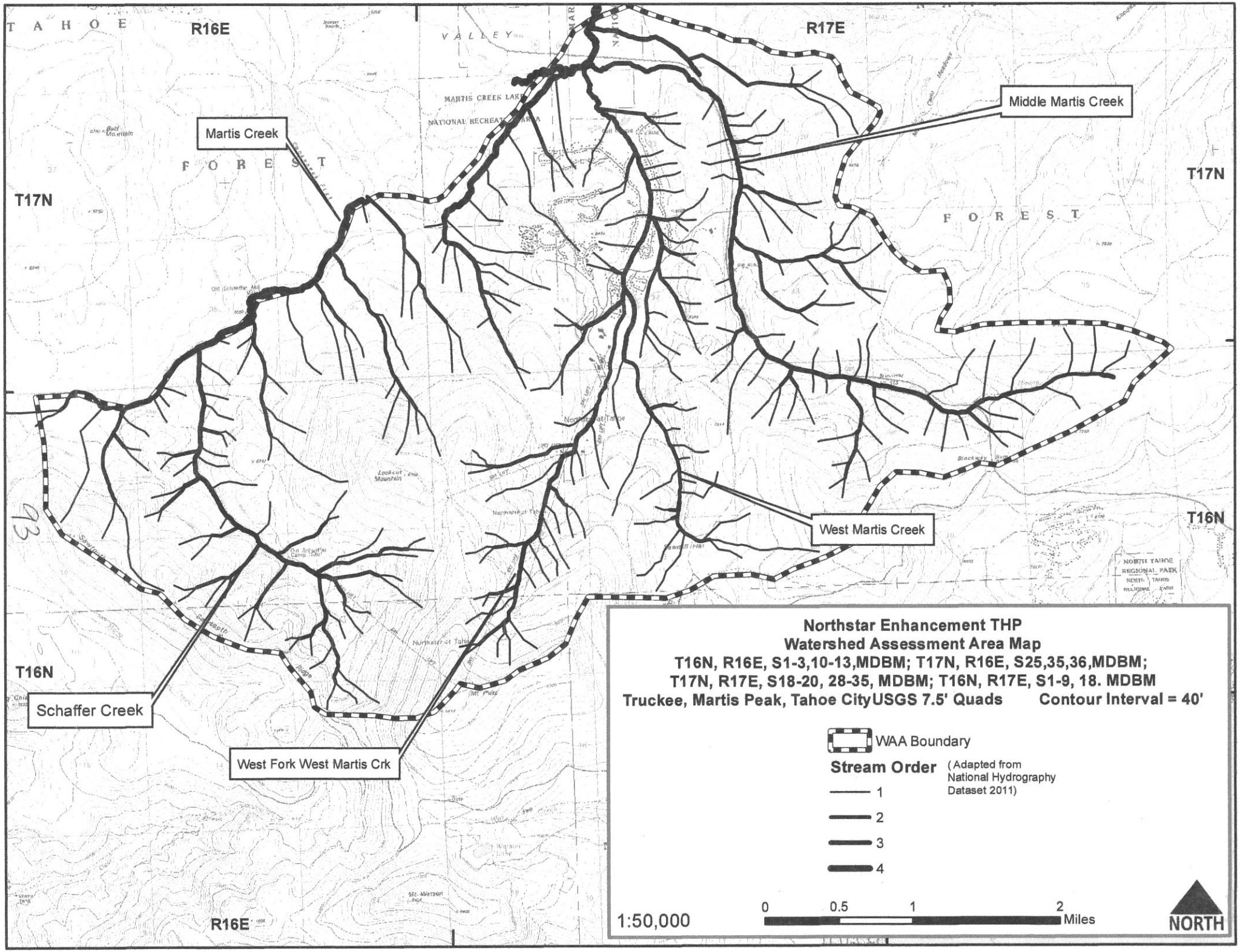
2) No new road construction is needed to implement the timber harvest plan. Use of existing roads has been emphasized, as has use of open areas for landings during timber operations, reducing the potential for soil movement and potential sedimentation.

3) Timber operations will occur during the summer period only. No winter operations are proposed within the THP, reducing the potential for soil compaction and any associated adverse soil effects, such as sediment transport during periods of winter precipitation.

4) Equipment crossings of watercourses have been kept to the most feasible minimum.

Watershed Resources Analysis and Conclusion

Considering the conditions described above, mitigation measures proposed, and application of the California Forest Practice Rules, I conclude the proposed THP will not contribute to or create new significant adverse effects on the subject watershed resources in regards to sediment effects, alteration of water temperature, introduction of organic debris or chemical contamination, and/or changes in peak flow rates. The proposed THP, as presented, in combination with past, present, and reasonably foreseeable, probable, future projects identified above, is not expected to have reasonably potential significant cumulative impacts to the watershed resources identified.


R16E
R17E
T17N
T16N
Martis Creek
Middle Martis Creek
West Martis Creek
Schaffer Creek
West Fork West Martis Crk
FOREST
Northstar Enhancement THP
Watershed Assessment Area Map
T16N, R16E, S1-3,10-13,MDBM; T17N, R16E, S25,35,36,MDBM;
T17N, R17E, S18-20, 28-35, MDBM; T16N, R17E, S1-9, 18. MDBM
Truckee, Martis Peak, Tahoe City USGS 7.5' Quads Contour Interval = 40'
WAA Boundary
Stream Order
(Adapted from National Hydrography Dataset 2011)
1
2
3
4
1:50,000
0 0.5 1 2 Miles
NORTH

SOIL PRODUCTIVITY

The cumulative soil productivity impacts assessment area is the proposed THP area.

The major soil types present within Plan boundaries are:
Jorge very Stony Sandy Loam
Jorge Tahoma Complex
Umpa stony sandy loam

Minor soil types present within the THP area as follows:
Jorge-Rubble Land Complex
Meiss-Waca-Cryumbrepts wet complex
Jorge-Cryumbrepts, wet-Tahoma complex
Umpa Rock Outcrop Complex
Fugawee-Tahoma Complex
Jorge-Waca-Tahoma Complex 30-50%

The Erosion Hazard Ratings of each soil type were calculated by the RPF. As calculated, the THP area contains soils with low to moderate EHRs, yet an EHR of "Moderate" was assigned to the entire THP area. Erosion Hazard Rating calculations have been included in THP Section V.

Cumulative soil productivity impacts occur when the effects of two or more activities, from the same or different projects, combine to produce a significant decrease in soil biomass production potential. These impacts most often occur on-site within the project boundary, and the relative severity of productivity losses for a given level of impact generally increases as site quality declines. The primary factors influencing soil productivity that can be affected by timber operations include:

Organic Matter Loss: Displacement or loss of organic matter can result in a long-term loss of soil productivity. Soil surface litter and downed woody debris are the store-house of long term soil fertility, provide for soil moisture conservation, and support soil microorganisms that are critical in the nutrient cycling and uptake process. Much of the chemical and microbial activity of the forest nutrient cycle is concentrated in the narrow zone at the soil and litter interface. Displacement of surface organic matter occurs as a result of skidding, mechanical site preparation, and other land disturbing timber operations. Actual loss of organic matter occurs as a result of burning or erosion. The effects of organic matter loss on soil productivity may be expressed in terms of the percentage displacement or loss as a result of all project activities. For the proposed timber operations, use of low impact logging equipment (standard harvester and forwarder) upon existing skid trails and roads will reduce potential soil disturbance & associated erosion and/or organic matter loss to the greatest extent feasible. Further, no broadcast burning is anticipated during timber operations, negating the associated organic matter loss. Last, implementation of the soil stabilization measures identified in THP Section II will reduce the risk of organic matter loss associated with erosive actions.

Surface Soil Loss: The soil is the storehouse of current and future site fertility, and the majority of nutrients are held in the upper few inches of the soil profile. Topsoil displacement or loss can have an immediate effect on site productivity, although effects may not be obvious because of reduced brush competition and lack of side-by-side comparisons or until the new stand begins to fully occupy the available growing space. Surface soil is primarily lost by erosion or by displacement into windrows, piles, or fills. Mass wasting is a special case of erosion with obvious extreme effects on site productivity. For the proposed timber operations, use of low impact logging equipment (standard harvester and forwarder) upon existing skid trails and roads will reduce potential soil disturbance & associated erosion to the greatest extent feasible. Also, implementation of the soil stabilization measures identified in THP Section II will reduce the risk of organic matter loss associated with erosive actions.

SOIL PRODUCTIVITY, con't:

Soil Compaction: Compaction affects site productivity through loss of large soil pores that transmit air and water in the soil and by restricting root penetration. Compaction effects may be evaluated by considering the soil conditions at the time of harvesting activities and the proportion of the project area subjected to compacting forces. During timber operations, compactive forces could potentially occur through skidding operations. For the proposed timber operations, use of low impact logging equipment (standard harvester and forwarder) upon existing skid trails and roads will reduce additional soil compaction to the greatest extent feasible by utilizing existing logging infrastructure. Also, no winter operations are requested for this THP, which further reduces the risk of soil compaction associated with timber operations conducted during periods of soil saturation.

Growing Space Loss: Forest growing space is lost to roads, landings, permanent skid trails, and other permanent or non-restored areas subjected to severe disturbance and compaction. The effects of growing space loss may be evaluated by considering the overall pattern of roads, etc., relative to feasible silvicultural systems and yarding methods. Timber operations associated with the Northstar Enhancement THP will utilize low impact logging equipment (standard harvester and forwarder) upon existing skid trails and roads to minimize growing space loss to the greatest extent feasible by utilizing existing logging infrastructure and not creating new skid trails or forest roads or landings.

Soil Productivity Effects Analysis and Conclusion

Considering the conditions described above, mitigation measures proposed, and application of the California Forest Practice Rules, I conclude the proposed THP will not contribute to or create new significant adverse effects on the subject soil resources in regards to loss of organic matter and surface soil, soil compaction, and/or growing space loss.

BIOLOGICAL RESOURCE ASSESSMENT

Biological Resource Assessment Area Description
The Biological Assessment Area (BAA) is a 16,932 acre area stretching from Martis Valley to the northern edge of Lake Tahoe, and west to Sawtooth Ridge.

Scoping
A scoping process was conducted to identify species of plants, animals, and habitats that could potentially be impacted by the proposed project. Sources used include the California Department of Fish and Game Natural Diversity Database (CNDDB) (November 2015: Truckee, Martis Peak, and Kings Beach 7.5' USGS Quads), California Native Plant Society (CNPS) nine-quad search (centered on Truckee, Martis Peak, and Kings Beach 7.5' Quad), and the Selected Rare Plants of Northern California handbook. Also consulted during this scoping process was the Northstar Mountain Master Plan Draft Environmental Impact Report, Biological Resource Analysis for the "SPOD THP" 2-09-008-PLA, Biological Survey for the 2010-2012 Northstar Grants in Zone E2, and Northstar Habitat Management Plan.

Factors considered in the evaluation of cumulative biological impacts, as per Technical Rule Addendum #2 (C)(1-4), are below:

1) Known Rare, Threatened, or Endangered Species or Sensitive Species That May be Directly or Indirectly Affected by Project Activities:

Floristic Resources
Scoping performed by the RPF identified plant species that may inhabit the THP area or vicinity. The scoping process produced the following "Master" plant list, adapted from the full table found in Section III:

Enhancement THP Floristic Resources Master Plant List	
Common Name	**Scientific Name**
Galena Creek rockcress	Arabis rigidissima var. demota
threetip sagebrush	Artemisia tripartita ssp. tripartita
upswept moonwort	Botrychium ascendens
scalloped moonwort	Botrychium crenulatum
common moonwort	Botrychium lunaria
Mingan moonwort	Botrychium minganense
Davy's sedge	Carex davyi
woolly-fruited sedge	Carex lasiocarpa
mud sedge	Carex limosa
English sundew	Drosera anglica
Oregon fireweed	Epilobium oreganum
Nevada daisy	Erigeron eatonii var. nevadincola
Donner Pass buckwheat	Eriogonum umbellatum var. torreyanum
American manna grass	Glyceria grandis
Plumas ivesia	Ivesia sericoleuca
Santa Lucia dwarf rush	Juncus luciensis
broad-nerved hump moss	Meesia uliginosa
Robbins' pondweed	Potamogeton robbinsii
alder buckthorn	Rhamnus alnifolia
Tahoe yellow cress	Rorippa subumbellata
marsh skullcap	Scutellaria galericulata
Munro's desert mallow	Sphaeralcea munroana
slender-leaved pondweed	Stuckenia filiformis ssp. alpina
Western goblin	Botrychium montanum
Northern meadow sedge	Carex praticola

Tiehm's rock cress	Boechera tiehmii
Bolander's candle moss	Bruchia bolanderi
Marsh willowherb	Epilobeum palustre
Starved daisy	Erigeron riser
Blandow's bog-moss	Helodium blandowii
Short-leaved hulsea	Hulsea brevifolia
Long-petaled lewisia	Lewisia longipetala
Nutall's ribbon-pondweed	Potamogeton epihydrus
Water bulrush	Schoenoplectus subterminalis
Austin's astragalus	Astragalus austniae
Fell-fields claytonia	Claytonia megarhiza
Long petaled lewisia	Lewisia longipetala
Sagebrush bluebells	Mertesia oblongifolia var. oblongifolia
Hiroshi's flapwort	Nardia hiroshii
Stebbin's phacelia	Phacelia stebbinsii

Of the species above, the THP area may provide suitable habitat for the following species, as listed on the Focused Plant List, Section III:

Galena Creek Rock Cress (Arabis rigidissima var. demote)
Threetip sagebrush (Artemisia tripartite ssp. Tripartite)
Davy's sedge (Carex davyi)
Plumas Ivesia (Ivesia sericoleuca)
Western goblin (Botrychium montanum)
upswept moonwort Botrychium ascendens
scalloped moonwort Botrychium crenulatum
common moonwort Botrychium lunaria
Mingan moonwort Botrychium minganense
English sundew Drosera anglica
Oregon fireweed Epilobium oreganum
Donner Pass buckwheat Eriogonum umbellatum var. torreyanum
Santa Lucia dwarf rush Juncus luciensis
broad-nerved hump moss Meesia uliginosa
alder buckthorn Rhamnus alnifolia
marsh skullcap Scutellaria galericulata
Western goblin Botrychium montanum
Northern meadow sedge Carex praticola
Bolander's candle moss Bruchia bolanderi
Marsh willowherb Epilobeum palustre
Short-leaved hulsea Hulsea brevifolia
Sagebrush bluebells Mertesia oblongifolia var. oblongifolia
Hiroshi's flapwort Nardia hiroshii

The RPF conducted a survey for the species identified on the focused plant list during July for all species that could potentially inhabit the wet area and meadow restoration units. All other species were surveyed for during the month of August 2015. Survey methodology has been detailed in THP Section III. None of the species on the focused plant list were located as a result of the floristic survey.

BIOLOGICAL RESOURCE ASSESSMENT, con't:

As included in THP Item #32, the following mitigation measure will be employed should any special status plant species be located during timber operations: "*If any listed plant species is located during active timber operations, the RPF will establish a 50-foot Equipment Exclusion Zone around the identified population(s). No timber operations are to occur within the 50-foot buffer. The identified area(s) will be excluded from operations until a site-specific consultation with the California DFW can be performed. Operations may occur/continue in areas that are not expected to contain suitable habitat. If a listed plant species is located within the THP boundary, the location and protection measures shall be amended into the THP.*"

Wildlife Resources

Below is a table summarizing all wildlife species identified during the scoping process for the THP and the Biological Assessment Area (BAA).

Wildlife Species That May Be Present or Affected by Timber Operations; Potential for Species Occurrence within the Proposed THP Area and Biological Assessment Area (BAA)

Species	Status	Preferred Habitat	Potential for Project to Impact This Species
		FISH	
Lahontan lake tui chub *Gila bicolor pectinifer*	C-SSC	Pelagic fish that feed on zooplankton in the open water of Lake Tahoe.	None. Species is not known or expected to occur outside of Lake Tahoe.
Cui-ui *Chasmistes cujus*	FE	Endemic to Pyramid Lake and the Lower Truckee River, all within the Pyramid Lake Paiute Reservation.	None. The THP area and BAA are outside of the range of this species.
Lahontan Cutthroat Trout (Oncorhynchus clarkii henshawi)	FT	Lahontan cutthroat trout are found in a wide variety of cold-water habitats including large terminal alkaline lakes, alpine lakes, slow meandering rivers, mountain rivers, and small headwater tributary streams. Generally, Lahontan cutthroat trout occur in cool flowing water with available cover of well-vegetated and stable stream banks, in areas where there are stream velocity breaks, and in relatively silt free, rocky riffle-run areas.	None. Suitable aquatic habitat is not located within the THP area. This species is known to occur north of the Biological Assessment Area (BAA).
		BIRDS	
Willow Flycatcher (Empidonax traillii)	C - E	Willow Flycatcher habitat generally includes wet meadow areas beginning at 0.22 acres in size with 50 to 70 percent cover by willow clumps interspersed with open areas containing sedges and grasses for foraging. Free flowing water is required during the early stages of breeding and pair formation but may dry during late June to August. Water and willows are critical elements of territories in the Sierra Nevada.	Low; Migratory habitat suitable for this species is located approximately 800 feet from a portion of the THP area. Another area of suitable migratory habitat is located within the Schaeffer Creek drainage, adjacent to the THP area. Mitigations are provided in Section II Item #32. This species has also been previously located within the Martis Creek Wildlife Area approximately 1.8 miles northwest of the THP area.
Northern Goshawk (Accipiter gentiles)	CSSC, BOFS	Three basic components of Northern goshawk habitat are generally recognized: nest area, post fledging-family area and foraging area. Nest areas are typically located on a northerly aspect in a drainage or canyon, often near a stream. The nesting pair occupies the nest from early March to late September. The nest area is the center of all movements and behaviors associated with breeding from courtship through fledging. The	Moderate; This species has been located west and east of the THP area. In 2010, two NGO nests were located in the far western portion of the Northstar ownership, outside of the THP area. The THP area and vicinity contain foraging habitat suitable for this species.

		post fledging-family area generally extends from the nest area and includes all forest types and conditions. Interspersed small openings, snags, downed logs, and woody debris are critical attributes. The foraging area includes all available habitats and forest types as all areas are opportunistically used depending on prey availability.	
Yellow warbler (Dendroica petechia brewsteri)	CSSC	An uncommon to common summer resident in the north. Mostly eats insects and spiders. Gleans and hovers in upper canopy of deciduous trees and shrubs. Usually found in riparian deciduous habitats in summer such as cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open conifer forests. Nest is an open cup placed 2-16 ft above ground in a deciduous sapling or shrub. Territory often includes tall trees for singing and foraging and a heavy brush understory for nesting. Yearlong, diurnal activity, usually arrives in California in April, mostly gone by October. Breeds from mid-April into early August with peak activity in June. Lays 3-6 eggs, incubated by female for 11 days. Young tended by both parents until fledging at 9-12 days. Young breed the following year.	Moderate; This species has been detected east of the THP area within a private ownership within the BAA. This THP does not propose alteration of montane riparian habitat, mitigating potential adverse effects to the species as a result of timber operations. Montane riparian habitat within the BAA contains suitable habitat.
Golden Eagle (Aqiula chrysaetos)	C-FP, BOFS	Uses rolling foothill, mountain area, sage-juniper flats, and desert habitats. Eats mostly lagomorphs, rodents, mammals, birds, reptiles, and some carrion. Needs open terrain for hunting, such as grasslands, deserts, savannahs, and early succession stages of forest and shrub habitats. Prefers secluded cliffs with overhanging ledges and large trees for cover. Nests on cliffs of all heights and in large trees in open areas. Builds large platform nests, often 10 feet across and 3 feet high, of sticks, twigs, and greenery. Rugged, open habitats with canyons are used most frequently for nesting. Yearlong, diurnal activity, with breeding from late January through August.	Not likely as the THP area and vicinity does not contain isolated open areas for hunting. The THP area does not contain rocky cliffs for nesting and cover. Open areas within the THP will be only minimally utilized for access during timber operations (use of existing roads). Tree removal and timber operations will not significantly alter the hunting habitat features this species requires. The BAA may present habitat suitable for this species.
Long-Eared Owl (Asio otus)	CSSC	A common yearlong resident, the Long-Eared Owl eats rodents and small birds, and prefers to hunt in open areas. For cover the Long-Eared owl seeks riparian areas or other thickets of vegetation. It tends to use old magpie, crow, hawk, heron, or squirrel nests in a variety of trees with dense canopy. The Long-Eared Owl mates March to July, laying 3-8 eggs during April to May, incubating for 28 days prior to fledging at about 50 days old.	Possible. The THP area does contain habitat suitable for this species. The THP area contains the prey base, nest trees, and thickets of vegetation utilized by this species. Hawks and crows have been observed within the THP area, which may provide nest stock. Tree removal and timber operations will not significantly alter the hunting habitat features this species requires.
Black Swift (Cypseloies niger)	CSSC	Forages widely over many habitats. Uses moist crevices or caves on sea cliffs above the surf or on cliffs behind, or adjacent to waterfalls in deep canyons. Feeds on insects. Diurnal activity, including migration. Migrates south for winter, mostly absent from October through April. . Breeds from early June to late August. **Rev. 7/11/2016**	None. The THP area and vicinity do not contain suitable habitat for this species.

Olive-Sided Flycatcher (Contopus cooperi)	CSSC	Preferred habitats include mixed conifer, montane hardwood-conifer, Douglas fir, redwood, red fir, and Lodgepole pine habitats. Sallies out for flying insects over forest canopy or adjacent meadows, clearings, or shrub covered slopes. Requires large, tall trees, for nesting and roosting sites. Typically uses the dead tips or uppermost branches of the tallest trees in the vicinity for singing posts and hunting perches. Yearlong, diurnal activity, with peak egg-laying in June.	Present. This species is known to occur in open canopy conifer forests within the Tahoe Basin. Species is not uncommon in the Tahoe region.
California Spotted Owl (*Strix occidentalis occidentalis*);	CSSC	A permanent resident Northern California, it resides in dense, old-growth, multi-layered mixed conifer and Douglas-fir habitats from sea level up to approximately 2300 m (0-7600 ft). The breeding range extends west of the Cascade Range through the North Coast Ranges and Sierra Nevada. It uses dense, multi-layered canopy cover for roost seclusion. Roost selection appears to be related closely to thermoregulatory needs; intolerant of high temperatures. During summer months, it roosts in dense overhead canopy north-facing slopes. Usually nests in tree or snag cavity, or in broken top of large tree. Less frequently nests in large mistletoe clump, abandoned raptor or raven nest, in cave or crevice, on cliff or ground (Call 1978). Mature, multi-layered forest stands are required for breeding. Breeding occurs from early March through June, with peak in April.	Moderate; Suitable foraging habitat exists within the THP area. A CA spotted Owl Territory is present in the extreme northwest corner of the Northstar ownership, outside of the THP area. Two additional territories with multiple observations have been documented within the BAA, approximately 0.95 mile southwest and 1.5 miles east of the meadow restoration unit of the THP area.
Bald Eagle (Haliaetus leuccephalus)	BGEPA, C-FP, BOFS	Utilized shorelines, lake margins, and rive courses for both nesting and wintering. Most nests are within 1 mile of water, in large trees with open branches.	Present; Nest located at Sawmill Reservoir, adjacent to the THP area.
Northern Harrier (Circus cyaneus)	C-SSC	This species utilizes a variety of open grassland, wetland, and agricultural habitats. Breeding habitat includes marshy meadows, and dry upland habitats. Winters throughout California where suitable habitat is present.	Moderate; This species has been observed in Martis Valley, north of the THP area. The THP area and BAA may contain suitable habitat.
Great gray owl (Strix nebulosa)	FC, BOFS	Found in Central Sierra mature mixed conifer forests near meadows. Scattered along the west slope of the Sierra, between 4,500 and 7,500 feet elevation, from Plumas County to Yosemite National Park.	Low; Habitat with the attributes considered suitable for great gray owl (e.g., meadows bordered by large trees) does not occur within the THP area. The BAA may contain suitable habitat.
Bank Swallow (Riparia riparia)	C-T	Nests in fine-textured or sandy banks or cliffs along rivers, streams, ponds, or lakes, typically nesting in colonies.	Low; Suitable habitat is not present within the THP area or vicinity.
Yellow-headed blackbird (Xanthocephalus xanthocephalus)	C-SSC	This species breeds in mashes that have tall emergent vegetation, and in open areas near and over relatively deep water.	Low; Suitable habitat is not present within the THP area or vicinity.
Greater sage-grouse (Centrocercus urophasianus)	FC	Semiarid shrub-grassland (shrub steppe) habitats; obligate user of sagebrush (*Artemesia* spp.).	Low; Project area is outside the range of this species. No suitable habitat.
Peregrine Falcon	C-FP,	Nests and roosts on protected ledges of high cliffs, typically adjacent to water bodies and wetlands that support avian prey.	Low; Suitable habitat for this species is not present within the THP area or BAA.
Coopers Hawk (Accipiter cooperi)	CSSC	Nests in coniferous forest, oak woodlands, and other mixed evergreen forests. Forages in a variety of habitats, from open to dense forest.	Moderate; forest habitat within the project area may provide foraging habitat and potential breeding habitat.

Sharp-shinned hawk (Accipiter striaus)	CSSC	Nests in coniferous or mixed forests, usually selecting a conifer for the nest tree. Forages in a wide variety of coniferous, mixed, or deciduous woodlands.	Moderate; forest habitat within the project area may provide foraging habitat and potential breeding habitat.
AMPHIBIANS/REPTILES/INVERTEBRATES			
Sierra Nevada yellow-legged frog (Rana sierra)	FE,CT	Occurs in the Sierra Nevada from Plumas to Fresno counties. Species is associated with streams, lakes, ponds in montane riparian, Lodgepole pine, subalpine conifer and wet meadow habitats. Feeds mainly on aquatic and terrestrial invertebrates. Species needs rocks or clumps of grass within a few feet of water for cover. Eggs are laid in shallow water attached to gravel or rocks from June to August, but will not occur until water is free from ice. Species is always encountered within a few feet of water.	Low; Suitable habitat may be present at Sawmill Reservoir, adjacent to the THP area. The THP area is located within the historic and current range of the species. The BAA presents habitat suitable for this species. However, known populations for this amphibian occur more than 20 miles away in the southeastern portion of the Lake Tahoe Basin (Northstar DEIR, 2013).
Yosemite toad (Bufo canarus)	F-T, C-SSC	This endemic California toad is found in wet meadows between 4000-12,000 feet elevation in the Sierra Nevadas from Alpine County south to Fresno County.	Low; The THP area and BAA is outside of the known range of this species.
Mount Lyell Salamander (Hydromantes platycephalus)	C-SSC	Isolated populations of this species occur in the Sierra Nevada from Sierra County south to Tulare County at elevations of 4000-12,000 feet. The species is associated within large rock outcrops in mixed conifer, red fir, Lodgepole pine, and subalpine habitats. Areas of open water in the form of seeps, drips, or spray may contain individual specimens.	Low; Suitable habitat for this species is not located within the THP area or BAA.
Northern leopard frog (Lithobates pipiens)	C-SSC	The native range of this species is known to be east of the Sierra Nevada crest, near permanent or semi-permanent water in a variety of habitats.	Low; The THP is outside of the known range of this species. There was a 1934 collection of this species near Lake Tahoe, within the BAA.
Great Basin rams-horn (Helisoma newberryi)	None	This species prefers larger lakes and slower rivers, including larger springs sources and spring fed creeks.	Low, suitable habitat is not located within the THP area or BAA.
Lake Tahoe Benthic Stonefly (Capnia lacustra)	None	This species is endemic to Lake Tahoe, found at depths of 95-400 feet.	Low, the THP area and BAA do not incorporate Lake Tahoe.
MAMMALS			
Sierra Nevada Mountain Beaver (Aplodontia rufa californica)	C-SSC	Mountain beavers occur in dense riparian-deciduous and open, brushy stages of most forest types. The species frequents open and intermediate-canopy coverage with a dense understory near water. Deep, friable soils are required for burrowing, along with a cool, moist microclimate. Active yearlong, the species feeds on vegetative parts of plants, mostly thimbleberry, salmonberry, blackberry, dogwood, salal, ferns, lupines, willows, and grasses. The species is also known to forage underground, on ground, under snow, on surface of snow, and up to15 ft in trees and bushes. Vegetation is stored near a burrow entrance or in underground chambers. The species prefers burrows and dense understory vegetation provide cover. Beavers line nest with dry vegetation, creating nest chambers situated 1 to 4.5 ft below the ground surface. Mountain beavers breed from December through March. Young born February to June with one litter per yr. Litter size averages 2-3. Mountain beavers require	Known to occur as of 2006 in montane riparian habitat west of the harvest units in T16N, R16E, S12, MDBM. The subject harvest units do not contain suitable habitat. The remaining harvest units within this THP do not contain suitable habitat. The BAA contains suitable habitat for this species. **Rev. 7.11.2016**

		a large daily intake of water, and most burrows contain water. The species is sedentary and non-migratory.	
Western white-tailed jackrabbit (Lepus townsendii)	C-SSC	This species principally occupies open forests and sagebrush-grassland associations in the Great Basin Province. They occur also at high elevations along the main crest of the Sierra Nevada and rarely to as low as 6000 ft on the western slope. White-tailed Hares occupy a variety of habitats, including Sagebrush-covered slopes on the eastern Sierra Nevada, grasslands and meadows to timberline or above, and forests of Lodgepole Pine, Yellow Pine, Western Juniper, Dwarf Juniper, Red Fir, and mixed conifers. The species requires thickets of young or stunted conifers, or deciduous, woody plants for day-time cover. It feeds primarily at night in meadows during summer. Winter staples probably include bark of Willows, Alders and other woody plants.	None. Habitat suitable for this species is not located within the THP area or BAA.
Sierra Nevada snowshoe hare (Lepus americanus tahoensis)	C-SSC	In California, primarily found in montane riparian habitats with thickets of alders and willows, and in stands of young conifers interspersed with chaparral. The early seral stages of mixed conifer, subalpine conifer, red fir, Jeffrey pine, Lodgepole pine, and aspen are likely habitats, primarily along edges, and especially near meadows. Dense cover is preferred, either in understory thickets of montane riparian habitats, or in shrubby understories of young conifer habitats. Prefers edges, heterogeneous habitats, and areas with dense understory, particularly in riparian habitats. Also found in areas with young firs with branches drooping to ground, and in patches of ceanothus and manzanita within, or bordering, fir or pine forests. Reproduction occurs in a shallow bowl-like depression made in dense understory or brush piles. It is likely that no definite nests are built but grass, fur, or needles may line a shallow form placed under a shrub, log, or in slash.	Possible. This species has been documented within the BAA. The THP area does not contain suitable habitat for this species.
California wolverine (Gulo gulo)	C-T	Primary habitat of the wolverine is forest and tundra. The wolverine does not migrate or hibernate, and is known for their voracious appetites and diverse diet including meat, eggs, roots, berries, and the remains of wolf kills. The wolverine marks its food caches with a foul smelling musk to repel other carnivores. This mammal's dens may contain leaves or grass in a protected place. They have a lengthy mating season from April to September, with young remaining with the mother for two years.	Low. The THP area does not provide suitable habitat for this species. The THP area does not contain suitable food sources or denning opportunities for the species. Suitable habitat does exist within the assessment area, though the species has never been reported to have been detected within the BAA.
Sierra Nevada Red Fox (Vulpes vulpes necator)	C-T	This species is rare in Sierra Nevada. Species populations may be found in a variety of habitats, including alpine dwarf-shrub, wet meadow, subalpine conifer, Lodgepole pine, red fir, aspen, montane chaparral, montane riparian, mixed conifer, and ponderosa pine. Jeffrey pine, eastside pine, and montane hardwood-conifer also are used. Most sightings in Sierra Nevada above 7000 ft, ranging from 3900-11,900 ft. The red fox hunts small and medium-sized mammals. Hunts in meadows, fell-fields, grasslands, wetlands, and	Moderate. Though this species is known to utilize a variety of habitats, due to the largely developed nature of the adjacent area and year-round human disturbances, the THP area has marginal habitat features to offer the Sierra Nevada Red Fox. The assessment area contains habitat suitable for this species.

		other open habitats. It uses dense vegetation and rocky areas for cover and den sites. Den sites include rock outcrops, hollow logs and stumps, and burrows in deep, loose soil. In the Sierra Nevada they prefer forests interspersed with meadows or alpine fell-fields. Sierra red foxes move down slope in winter into ponderosa pine and mixed conifer, upslope in summer to Lodgepole pine, subalpine conifer, alpine dwarf-shrub, and red fir habitats. Mating takes place in late winter (January-March), and after a gestation of 52 days, young born in early spring (March-May). Litter sizes average about 5 with 1 litter/yr. Pups dependent on parents for 6 mo, and become sexually mature at 10 months.	
Pallid Bat (Antrozous pallidus)	CSSC	This large-eyed bat is pale cream to light brown in color dorsally with white undersides, and has long, wide pale ears. Females usually have twins in early June. Habitat includes rocky mountainous areas near water as well as sparsely vegetated grasslands. They may prefer to forage in the open. Daily, the pallid bat has three roosts: by day they roost in a warm horizontal opening, by night they roost within the foliage, and during hibernation they roost in buildings, caves, or cracks in rocks. The species range exists from western Canada to central Mexico. The pallid bat mainly feeds on insects on foliage or on the ground, and can consume up to half their weight in insects per night.	Not likely. The THP area and immediate vicinity lack the sustained water supply and/or other water features required by this bat species. The BAA may present habitat suitable for this species.
Red Fox (Vulpes vulpes)	C-T	This species is rare in Sierra Nevada, but widely distributed in lowlands in central and southern California. Sierra Nevada populations may be found in a variety of habitats, including alpine dwarf-shrub, wet meadow, subalpine conifer, Lodgepole pine, red fir, aspen, montane chaparral, montane riparian, mixed conifer, and ponderosa pine. Jeffrey pine, eastside pine, and montane hardwood-conifer also are used. Most sightings in Sierra Nevada above 7000 ft, ranging from 3900-11,900 ft. The red fox hunts small and medium-sized mammals, ground squirrels, gophers, mice, marmots, wood rats, and rabbits. Other vertebrates, insects, carrion, fruits, and earthworms used occasionally. Hunts in meadows, fell-fields, grasslands, wetlands, and other open habitats. Den sites include rock outcrops, hollow logs and stumps, and burrows in deep, loose soil. In the Sierra Nevada they prefer forests interspersed with meadows or alpine fell-fields. Mating takes place in late winter (January-March), and after a gestation period of 52 days, young born in early spring (March-May). One litter a year may be born, with litter sizes in many studies averaging 5 young.	Low. The THP area does not contain the general preferred tree species. Lower elevations of the BAA contain the Jeffrey Pine habitat that this species may find suitable, as well as suitable prey base and den sites.
Townsend's Big-Eared Bat (Corynorhinus townsendii)	CSSC	Found throughout California, but the details of its distribution are not well known. This species is found in all but subalpine and alpine habitats, and may be found at any season throughout its range. Once considered common, it's now considered uncommon in California. Feeds on small moths,	Low. Although optimal habitat is not present, conifer forests, creeks, and meadows within the THP area could provide foraging habitat. However, the THP area does not contain abandoned

		beetles, and a variety of soft-bodied insects. Captures its prey in flight using echolocation or by collecting it from foliage. Requires caves, mines, tunnels, buildings, or other man-made structures for roosting and cover. This nocturnal bat hibernates from October through April. Most mating occurs from November through February, but females are inseminated before hibernation. Births occur in May and June with a liter of 1 being produced. Extremely sensitive to disturbance of roosting sites. A single visit may result in abandonment of the roost.	buildings, mines, or adits. Previous forest management activities have removed many trees with defect or the potential to develop defect as part of prior harvest operations. Trees with basal hollows are less likely to occur within the THP area. Trees with basal hollows are more likely to be present within the late seral stands within the BAA.
Western Red Bat (Lasiurus blossevillii)	C-SSC	Roosting habitat tends to be edge habitats adjacent to streams or open fields, with preference for willow, cottonwood, and sycamore riparian habitat.	Moderate; Some potential roosting and foraging habitat exist near the THP area along the riparian corridor, and the species has been detected in the Tahoe Basin.
Sierra Marten (Martes caurina sierra)	None	Prefers mature conifer forest habitats above 5,500 feet, with large diameter trees, snags, and down logs, moderate to high canopy-closure, and interspersion of riparian areas and meadows.	Moderate; Suitable foraging and movement habitat are present within the immediate vicinity of the THP area.
Pacific fisher (Martes pennant pacifica)	FC, C-SSC	Forested habitats below 8,500 feet elevation with dense canopies and large trees, snags, and down logs, Pine, Douglas fir, and true fir stand types are known habitat of this species.	Low; fishers are considered extirpated from the Tahoe region and there are no current records of this species within the vicinity of the THP area.
Mule deer	None	Year-long resident or migrant that utilizes a wide variety of various-aged vegetation for cover and fawning habitat, including mid-succession forests, riparian areas, dense woody thickets, edge habitat, and brush.	High; Observed within the THP vicinity during 2015 biological surveys conducted by the RPF.
Fringed myotis (Myotis thysanodes	None	Associated with a variety of habitats; optimal habitat includes pinyon-juniper, valley foothill hardwood, and hardwood-conifer. Uses open habitats, streams, lakes, and ponds as foraging areas. Roosts in caves, mines, buildings, and crevices.	Low. This species has been detected in the Tahoe Basin; however, there are no known occurrences in or near the THP area, and optimal habitat is not present.

Key to Status Acronyms:

CSSC = California Department Fish and Wildlife Species of Special Concern
FC = Federal Candidate for listing as threatened or endangered under Endangered Species Act
BOFS = CA Board of Forestry Sensitive Species
FSS = Forest Service Sensitive Species
C-C – California Candidate for Listing
C-T = California Threatened
C-FP = California Fully Protected
FE = Federal Endangered
BGEPA = Protected under the Bald and Golden Eagle Protection Act

Federal, State, and local regulations require consideration and protection of ecological habitats and the species they support. These regulations include the Federal Endangered Species Act, Clean Water Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, California Endangered Species Act, California Fish and Game Code, the California Forest Practice Rules, Placer County General Plan Table 6-2, and the Martis Valley Community Plan Table 6-3. This THP has been designed to comply with the considerations set forth in the California Forest Practice Rules, which are tiered from other State and Federal level regulatory mechanisms. Compliance with the aforementioned regulations will effectively mitigate potential adverse effects of the proposed Timber Harvest Plan to a level of less than significant.

BIOLOGICAL RESOURCE ASSESSMENT, con't

2) Any Significant, Known Wildlife or Fisheries Resource Concerns Within the Immediate Project Area and the BAA:
The presence of an active Bald Eagle nest east on the shore of Sawmill Reservoir is the primary resource concern for this THP. The California Department of Fish and Wildlife was consulted regarding this nest, and viewed the site with the RPF on December 3, 3015. It was determined that a ten acre buffer around the nest would be adequate, and that no timber operations would occur in the restoration units until after the end of the critical period (August 15th) annually.

An additional concern is the presence of Willow Flycatcher habitat adjacent to the harvest unit in T16N, R16E, S1, 2, 11, and 12, MDBM. This habitat was previously surveyed in 2007, and though no evidence of nesting was found, the habitat is considered to support migration of the species. Silvicultural boundaries have been located over 600 feet from suspected willow flycatcher habitat.

3) The Aquatic and Near-Water Habitat Conditions of the THP and Immediate Surrounding Area:

The THP area contains Schaeffer Creek, West Martis Creek, West Martis meadow, West fork of West Martis Creek, and is adjacent to Sawmill Reservoir. West Martis Creek originates in a large meadow system south of Sawmill Reservoir. A small portion of this meadow has been incorporated into the THP for wet meadow restoration. Currently, this meadow system is a short grass system that is being encroached upon by young Lodgepole Pine regeneration. Isolated salix willow clusters are present intermittently along the West Martis Creek channel. Overstory vegetation, where present, is composed of conifer cover. The meadow portion of West Martis Creek contains pools, yet lacks riffles, large woody debris. Near water vegetation is composed greatly of native sedges. Substrate is native cobbles and down woody debris composed largely of White fir logs <14" DBH are present in nominal quantities.

Sawmill Reservoir is a manmade reservoir on upper reaches of West Martis Creek. The feature is owned and operated by Northstar Community Services District for domestic use and pay-for-fishing enterprise. This reservoir has no near water vegetation unless at 100% capacity, when at such time native mixed conifer stands would be the only near water vegetation. The reservoir inlet appears to have submerged vegetation. The reservoir is regularly planted with rainbow trout as part of the fishing enterprise. Water within the reservoir is drawn down for domestic purposes, or if at capacity, will enter a spillway and become tributary to the West Martis Creek channel.

The stretch of West Martis Creek below Sawmill Reservoir, and nearly the entire length of the West Fork of West Martis Creek, are located within the core resort area of the Northstar California ski resort. Within the northern THP area and immediate vicinity, these drainages have been greatly improved to accommodate resort amenities. Riparian vegetation is generally lacking and each of these watercourses flows through ski runs that are void of vegetation other than a nominal herb layer that is kept very short for reasons of safety and access. Short stretches of these watercourses exit the ski runs and in isolated portions, may contain mountain alder thickets. These more natural stretches also tend to exhibit braiding and pooling of the natural channels, with native gravel and cobble substrate and conifer overstory. Pools, riffles, large woody debris, and near-water vegetation only exist on a very short span of these watercourses, just north of the Northstar Village area. Likewise, Quaking Aspen (Populus tremuloides) is present in the lower reaches of this watercourse near the Northstar Village parking lot. Otherwise, those characteristics are lacking from West Maris Creek and the West Fork of West Martis Creek. The lower reaches of West Martis Creek are heavily developed with parking lots and condominiums paralleling this watercourse on its decent towards Martis Creek.

Schaeffer Creek is a Class I watercourse that contains pools, slight riffles, and large woody debris composed of White Fir generally 12" DBH and larger. The channel meanders through conifer forest overstory with intermittent and sparse understory of Mountain Alder. Near water vegetation is generally not riparian in nature as the conifer overstory dominates both sides of this watercourse near the THP area.

4) The Biological Habitat Condition of the THP and Immediate Surrounding Area:

- *Snags/Den Trees, Downed, Large Woody Debris:* The THP area is located within core ski resort area and vicinity. Ski trails, mountain bike trails, and seasonal roads are present within and adjacent to portions of the THP area. During construction of the ski trails, cut logs, large boulders, and conifer root wads were placed within the forested portion of the THP areas located adjacent to ski trails. Natural dead fall has also contributed to large woody debris on the forest floor of the THP area. Hence, large woody debris is present at nominal to moderate levels throughout the forested portions of the THP area, with the average debris dimensions being 16" diameter and between 15 and 25 feet in length. Portions of this large woody debris are present in concentrated, "jackstraw" fashion, though most is decaying at or near the forest floor, of decay classes 3-5.

Portions of the THP area currently contain an average of 2 snags per acre. Recent mortality due to Cytospora canker and fir engraver has hastened snag recruitment within the sanitation/salvage units of THP area. Red fir snags are the most abundant species of snag within these areas. Continued snag recruitment is anticipated as recent extended drought has weakened many trees already infected with Cytoposra and Mistletoe. Downed woody debris is present within the THP area most abundantly within the sanitation salvage units. Elsewhere, the subject debris is generally comprised of trees less than 14" DBH. The THP area contains stands of two or more layers within approximately 70% of the total THP acreage. The remaining acres generally lack a multistoried stand structure as the result of previous land management activities.

- *Multistory Canopy, Hardwood Cover*: The forested portions of the THP area and immediate surrounding area are generally of the White fir and Red fir stand types. These stands have been subject to uneven age silvicultural practices in the past, as well as sanitation/salvage harvesting to capture dead and dying conifers. The THP area and immediate vicinity exhibit CWHR White fir stand types of size 4P and 4M. Due to excessive stand density, crown class differentiation is obvious as the intermediate and suppressed trees form a marginal understory, where present. Otherwise the stand lacks a balanced stand structure due to the general absence of healthy young growth conifer regeneration. The overstory canopy formed by the codominant and dominant conifers creates the main stand structure in the THP area and vicinity. Multistory canopy is not present in these areas. These areas are similarly void of any hardwood component as no hardwood species are present within the THP area or vicinity.

- *Late Seral Forest Characteristics, Late Seral Habitat Continuity*: Late seral forest characteristics and habitat continuity are not present within the THP area, yet the vicinity contains a minor and fragmented amount of late seral forest. The Northstar Habitat Management Plan identifies approximately 92.6 acres of seral forest within three different stands in the Biological Assessment Area. Over 90% of this acreage is located in two stands, each over 0.75 miles southwest of the THP area in T16N, R16E, S2, MDBM. The remaining 10% is located in one stand adjacent to one harvest unit in T16N, R16E, S12, MDBM. The spatial location of these late seral stands lack continuity. However, these stands will not be entered as part of timber operations, effectively allowing these stands to provide the biological functions unique to forests of late seral stage.

- *Road Density*: Within the BAA, road density is the most significant from the Northstar Resort and south, including the THP area and immediate vicinity. GIS analysis indicates the BAA as a whole contains 96 miles of primary and seasonal secondary roads. As the BAA is 16,932 acres, this equates to 1 mile of road for every 176 acres. Vegetative screening is minimal from the primary, permanent public roads such as State Route 267, Highlands View Drive, and residential streets. However, vegetative screening along the 62 miles of secondary seasonal dirt roads is more significant and substantial as dense conifer stands with a shrub component and select brush fields are present near the road edge. These secondary roads comprise 65% of the overall road density. Further, the vast majority of the secondary roads analyzed herein are present within the greater Northstar landholding, or that of the neighboring industrial timberland owner. These roads are gated to prevent unwarranted public access into the resort and industrial timberlands. This level of control limits the extent of use of the secondary roads within Northstar, and prevents through travel for standard and Off-Highway Vehicles, reducing the overall use of the subject roads. Hence, the existing secondary road density does not prevent mammals from accessing the area's water, food, or cover. Therefore road density within the BAA is not expected to contribute to adverse effects to the biological

resources of the assessment area.

Biological Resources Analysis and Conclusion

The Northstar Habitat Management Plan provides specific resource management guidance for land use and operations of the Northstar property and serves as a key planning tool for project development and implementation. The harvest units included in the THP occur in the following management zones:

Zones A: (Developed Community), 86.2 acres planned for harvest.
Zone B: (Intensive Ski Area Development) 274 acres planned for harvest.
Zone C: (Intensive Recreation Use Area) 85 acres planned for harvest.
Zone D: (Recreation Use/Habitat Conservation Area), 75 acres planned for harvest.
Zone E: (Habitat Conservation Area), 13 acres planned for harvest.

For each zone, one or more objectives describe the desired outcome or the given area, and are used to develop resource management targets. The forest management targets, by zone, are summarized below and shown on the HMP Zone map:

Zone A: Zone A forests are managed for reduction of fire risk and reduction of danger trees that pose a risk to public health and safety; Northstar Community Services District ordinance No. 4-00 and the California Forest Practice Rules shall guides timber harvest operations in this zone with the primary goals of minimizing fire risk and maximizing human safety.

Zone B and C: Forests in Zone B are managed for the protection of human safety and forest health, and to maintain and enhance natural resources to the extent practicable (without compromising human safety or forest health). Management practices shall conform to all applicable California Forest Practice Rules, and the specific terms and conditions of Timber Harvest Plans (THPs) for timber operations in this zone.

Zone D: Forest Management Practices
Forests in Zone D are managed for the protection of human safety and forest health, and to maintain and enhance natural resources to the extent practicable (without compromising human safety or forest health). Management practices shall conform to all applicable California Forest Practice Rules, and the specific terms and conditions of Timber Harvest Plans (THPs) for timber operations in this zone. In addition to measures required by the California Forest Practice Rules and included in THPs, Northstar has forest management practices in Zone D that further support the objective of maintaining and/or enhancing natural
resources. These management practices include the following:

- Implement CDF silviculture practices for forest health and fuels management that are compatible with tree skiing.
- Maintain or enhance forest floor complexity by retaining down logs based on size as described in the HMP.
- Retain 3–6 of the largest snags per acre (with 6 per acre in CWHR Class 5M, 5D, and 6; and with 3 per acre in 4S), and all snags ≥ 15 inches in DBH, except within 100 feet of roads, or where felling of snags is required for disease or insect control, or there is a threat to human health or safety.
- Retain the largest live trees, particularly dying or defective trees (broken tops, insect infestations [except during high risk periods for insect outbreaks]); retain trees ≥ 30 inches in DBH to the extent practicable.

This combination of forest management practices supports the maintenance and enhancement of the habitat values of existing late-seral stands in Zone D.

Zone E: Forest Management Practices

Forests in Zone E are managed for the protection of human safety and forest health, and to maintain and enhance natural resources to the extent practicable (without compromising human safety or forest health). Management practices conform to all applicable California Forest Practice Rules, and the specific terms and conditions of Timber Harvest Plans (THPs) for timber operations in this zone. In addition to measures required by the California Forest Practice Rules and included in THPs, Northstar has forest management practices in Zone E that further support the objective of maintaining and/or enhancing natural resources. These management practices include the following:

-Minimize tree removal within and fragmentation of late-seral forest polygons classified as high or moderate habitat value.

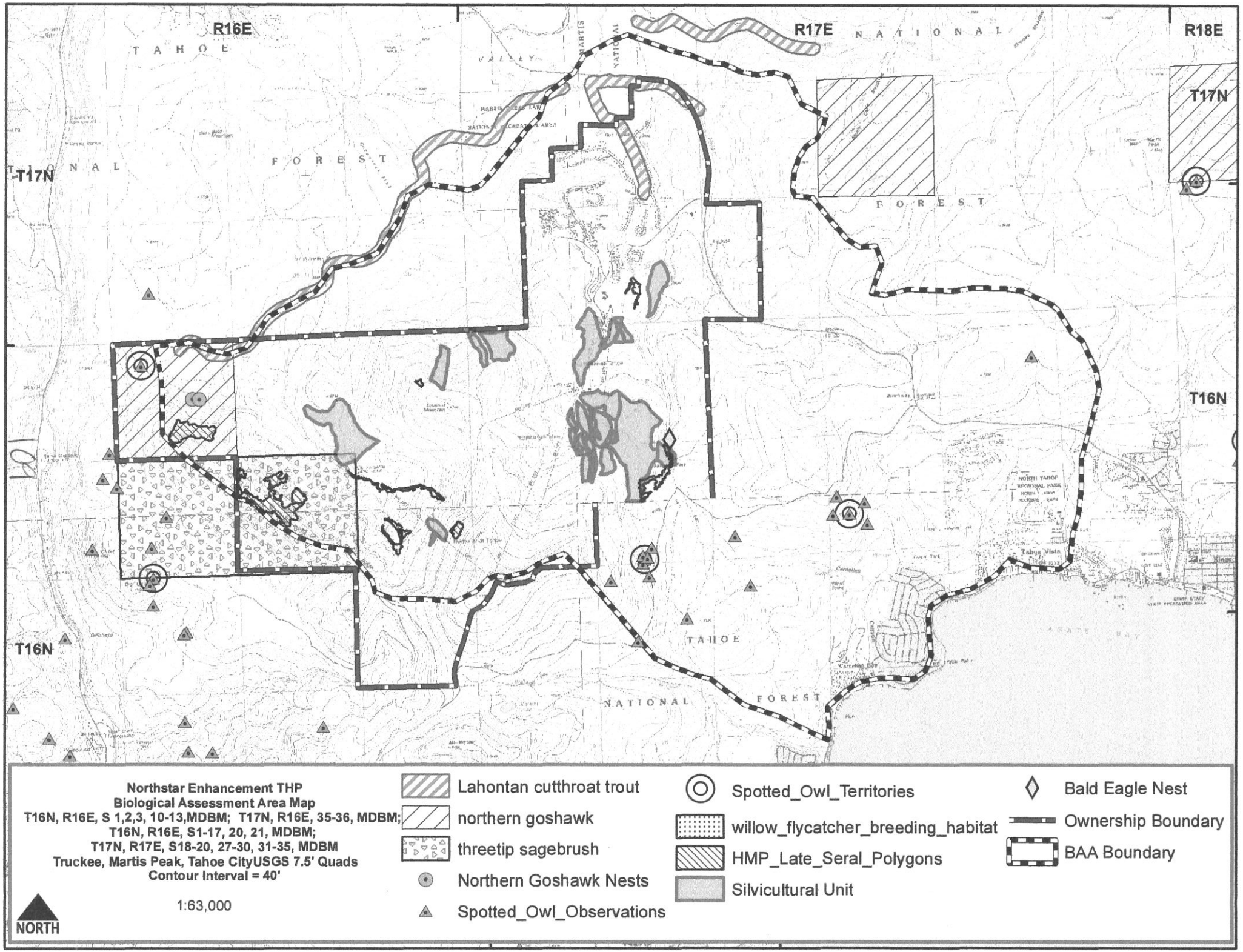
- Maintain or enhance forest floor complexity by retaining down logs as based on size and listed in the HMP.

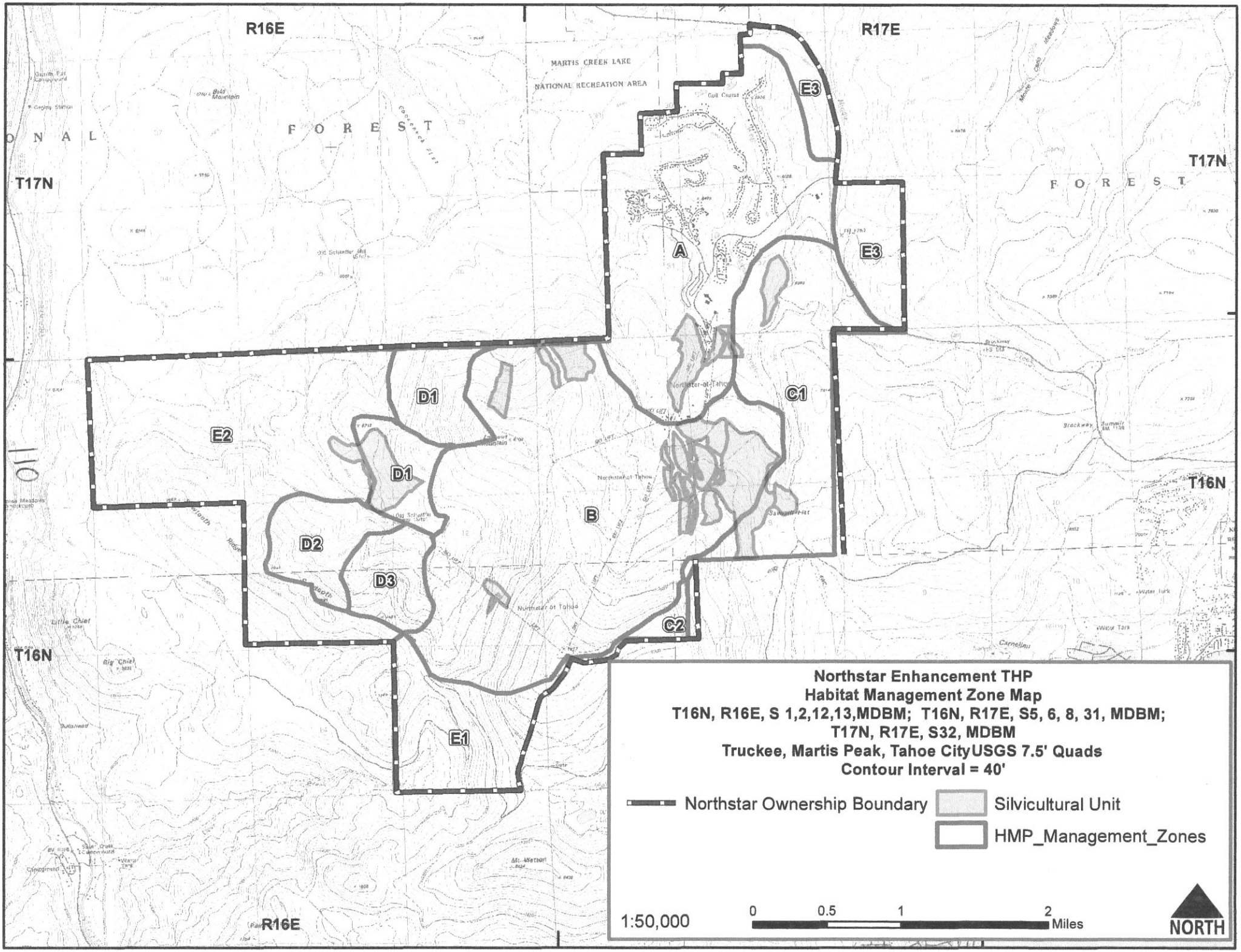
- Retain six of the largest snags per acre (3–6 per acre in CWHR Classes 4S and 5S), and all snags ≥ 15 inches in DBH, except within 100 feet of roads, or where felling of snags is required for disease or insect control, or there is a threat to human health or safety.

- Retain the largest live trees, particularly dying or defective trees (broken tops, insect infestations [except during high risk periods for insect outbreaks]); retain trees ≥ 30 inches in DBH to the extent practicable.

Each silvicultural unit within this THP is in compliance with the provisions of the HMP and mitigations have been designed to support this compliance. The mitigations described in THP Sections II and IV were developed to accommodate HMP design standards to avoid impacts to sensitive resources including special status wildlife species. This compliance mitigates impacts to biological resources to a level of less than significant.

Considering the conditions described above, mitigation measures proposed, and application of the California Forest Practice Rules, it can be inferred that the project, as mitigated, will not contribute to or create new significant adverse effects on the subject biological resources in regards to channel characteristics, snags/dens/nest trees, downed, large woody debris, multistory canopy, road density, hardwood over, late seral forest characteristics and habitat continuity, and/or special habitat elements.


R16E
R17E
R18E
T17N
T16N
TAHOE
NATIONAL
FOREST
Northstar Enhancement THP
Biological Assessment Area Map
T16N, R16E, S 1,2,3, 10-13,MDBM; T17N, R16E, 35-36, MDBM;
T16N, R16E, S1-17, 20, 21, MDBM;
T17N, R17E, S18-20, 27-30, 31-35, MDBM
Truckee, Martis Peak, Tahoe CityUSGS 7.5' Quads
Contour Interval = 40'
1:63,000
NORTH
Lahontan cutthroat trout
northern goshawk
threetip sagebrush
Northern Goshawk Nests
Spotted_Owl_Observations
Spotted_Owl_Territories
willow_flycatcher_breeding_habitat
HMP_Late_Seral_Polygons
Silvicultural Unit
Bald Eagle Nest
Ownership Boundary
BAA Boundary


R16E
R17E
T17N
T16N
T16N
R16E
MARTIS CREEK LAKE
NATIONAL RECREATION AREA
FOREST
FOREST
A
B
C1
C2
D1
D1
D2
D3
E1
E2
E3
E3
Northstar Enhancement THP
Habitat Management Zone Map
T16N, R16E, S 1,2,12,13,MDBM; T16N, R17E, S5, 6, 8, 31, MDBM;
T17N, R17E, S32, MDBM
Truckee, Martis Peak, Tahoe CityUSGS 7.5' Quads
Contour Interval = 40'
Northstar Ownership Boundary
Silvicultural Unit
HMP_Management_Zones
1:50,000
0
0.5
1
2
Miles
NORTH

RECREATIONAL RESOURCES ASSESSMENT

The Recreational Resource Assessment Area includes the THP area and 300 feet in all directions.

The THP area exists within the Northstar California ski resort near Truckee, California. The individual silvicultural units are located within the resort core as well as the outer vicinity of the ownership. Recreational activities vary from season to season at Northstar. In the winter, large numbers of people visit the ski resort and frequent the nearby ski trail. During the summer months, recreation activities include mountain biking and hiking on the vast array of trails available at Northstar. The resort typically offers free gondola and chair lift rides during the summer for hikers and sightseers, and partakes in hosting competitive bike races.

Timber operations will be scheduled to occur during the months from May to November when the ski facilities are closed. Temporary impacts to summer recreationalists can be expected as a result of timber operations, generally in the form of temporary closure of bike trails. However, recreational opportunities at Northstar will not be significantly adversely impacted as a result of timber operations as the expansive trail system covering the resort will afford recreationalists the option of utilizing many other recreational trails in areas away from the THP area.

Recreational Resources Analysis and Conclusion

Considering the conditions described above, mitigation measures proposed, and application of the California Forest Practice Rules, I conclude that proposed THP will not contribute to or create new significant adverse effects on the subject recreational resources.

VISUAL RESOURCES ASSESSMENT

The Visual Assessment Area (VAA) is the proposed THP area that is readily visible to significant numbers of people who are no further than three miles from the timber operations. Portions of the THP area can be seen from the mid mountain and village areas of the resort, which includes chairlifts, a gondola, a maintenance shop, and ski trails. The THP units that are outside of the greater resort area can only be seen by a small number of individuals that have permission to travel the Northstar road system, or those which are on bikes utilizing portions of the subject road system. Forest stands treated as part of this THP will resemble well thinned, healthy forest stands with reduced abundance of disease and insect affected trees. Timber operations are in sync with the existing and planned uses of the area, and will not cause significant adverse impacts to the visual resources of the existing resort area by maintaining conifer cover of increased health, vigor, and spatial arrangement.

USGS quad maps and the Tahoe National Forest Visitor map were analyzed to locate potential points of interest for travelers along Highway 267 from which the THP area may be viewed. This analysis indicated that rest stops, bridges, vistas offering scenic photographs, developed picnic sites, and similar pubic gathering areas are not present within the Visual Resources Assessment Area. Further, the THP area cannot be readily seen from Highway 267 travelers due to topographical barriers to the line of sight. Further, the project cannot be seen from Interstate 80 or Northstar Drive view sheds. Lacking these required features and line of sight, timber operations are not expected to significantly adversely affect the visual resources of the area.

Visual Resources Analysis and Conclusion

Considering the conditions described above, mitigation measures proposed, and application of the California Forest Practice Rules, I conclude that proposed THP will not contribute to or create new significant adverse effects on the subject visual resources.

VEHICULAR TRAFFIC IMPACT ASSESSMENT

The Traffic Assessment Area is the area that involves the first roads not part of the logging area on which logging traffic must travel. State Highway 267 is the sole haul route from the THP area. Logs will be hauled north on Highway 267 towards Interstate 80, with likely destinations of either Lincoln or Quincy, California. Each of these roads has been designed to accommodate log truck traffic and significant traffic from the public.

Timber operations permitted by the THP are planned for the summer and fall months during the term of the THP. Log haul traffic will be permitted from the hours of 7am to 5pm Monday through Saturday. It is anticipated that approximately four loads will be removed each day. Due to the relatively small daily volume of logs being hauled, adverse traffic impacts are not expected as a result of the proposed timber operations.

Vehicular Traffic Impacts Analysis and Conclusion

Considering the conditions described above, mitigation measures proposed, and application of the California Forest Practice Rules, I conclude that the proposed THP will not contribute to or create new significant adverse vehicular traffic impacts.

CLIMATE CHANGE

Though considerable controversy surrounds the specific causes of climate change, many scientists and policymakers believe that the global climate is warming at rates unforeseen in the past. In response to growing concern over climate change, Governor Schwarzenegger singed Assembly Bill 32, the Global Warming Solutions Act of 2006. AB 32 establishes the first-in-the-world comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, reductions of greenhouse gases. Specifically, the law established a statewide Greenhouse Gas (GHG) emissions cap for 2020, based upon the 1990 emissions levels, and requires state agencies to develop California's first strategy to identify and prepare for the expected impacts of a changing climate.

In December 2008, the California Air Resources Board released the state's "Climate Change Scoping Plan", which outlined a range of strategies necessary for the state to reduce its GHG emissions to 1990 levels by the year 2020. Building on this Scoping Plan, the California Natural Resources Agency released the "2009 California Climate Adaptation Strategy". This strategy discusses what efforts will be employed to respond to the impacts of climate change. By doing so, the State has begun to effectively anticipate future challenges and requires changes that will ultimately reduce the vulnerability to residents, resources, and industries of the consequences of a variable and changing climate.

The Strategy reads "*California's ability to manage its climate risks through adaptation depends on a number of critical factors including ...sustainably-managed natural resources.*" Section II, chapter 16 of the State Scoping Plan, indicates the recommended action for sustainable forests is to "*Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.*" Specifically, the Scoping Plan target for California's forest sector is to maintain the current 5 MMTCOE of sequestration through sustainable management practices, including reducing the risk of catastrophic wildfire, and avoidance or mitigation of land-use changes that reduce carbon storage. The Scoping Plan specifically expresses concern over the potential decline of the carbon sink, or California's forests, and stresses the importance of maintaining, at a minimum, current carbon stocks over time. Part of maintaining current carbon stocks is to prevent the loss of forest land to development. Hence, future land decisions will play a key role in achieving the Plan's GHG emission reduction goals for the forestry sector.

The guiding principles for management of California's state and private forest lands are stated in the Z'berg-Nejedly Forest Practice Act of 1973 (FPA), where the State Legislature declared that "*it is the policy of this state to encourage prudent and responsible forest resource management calculated to serve the public's need for timber and other forest products, while giving consideration to the public's need for watershed protection, fisheries and wildlife, and recreational opportunities alike in this and future generations*".

The Northstar Enhancement THP proposes 527 acres of timber harvest: 440 acres of commercial thinning, 72 acres of Sanitation Salvage, and 14 acres of wet area/meadow restoration. The commercial thinning and sanitation/salvage units will be harvested at similar intensities and generally contain very similar stand types and board foot volumes. Through the process of thinning, stand density will be reduced, thereby redistributing growth onto fewer, more vigorous stems per acre. The associated reduction in inter-tree competition will support increased vigor and growth rates upon the residual trees, which also supports an increase the carbon sequestration of the stand. As such, these silvicultural systems will be combined for the purposes of this assessment, for a total of 512 acres.

The wet area/wet meadow restoration unit will be treated independently as the dominant conifer cover will largely be removed and the residual stand will not meet the MSP. The 14 acre restoration unit will occur in a forested parcel of 232 gross acres. Of this amount, approximately 68 acres is within a commercial thinning unit accounted for separately as described above. The remaining 150 acres will not be harvested. The unharvested acres are identified as "Matrix – No Harvest" for the purposes of the greenhouse gas emissions calculations, and have been assessed separately as those acres will continue unaltered carbon sequestration. As presented in the emissions summary below, carbon sequestration associated with timber harvests presented in this THP is over 80 times greater than the net emissions involved with the harvest. The GHG emissions calculations indicate that carbon stocks will be recouped from the initial commercial thinning and sanitation/salvage harvests within 8 years.

The Cal Fire Greenhouse Gas (GHG) Calculator was utilized to assess the greenhouse gas sequestration and emissions resulting from timber harvest activities associated with this THP. The estimated carbon sequestration is determined from conifer growth within the project area and from carbon stored in milled wood products. Carbon dioxide emissions are estimated by considering the amount of wood harvested but not converted to wood product, plus the non-biological emissions associated with harvesting, site preparation, and milling practices. The difference between sequestration and emissions is the total project sequestration during the user-defined planning period. The GHG calculator provides a project summary depicting sequestration versus emissions, and also indicates the estimated numbers of years until carbon stocks are recouped from the initial harvest.

The Cal Fire GHG calculator was utilized to determine total carbon sequestration for the THP area. The results have been provided below:

Northstar Enhancement THP GHG Calculator Summary Table				
Area	**Acres**	**Sum of Non-Biological Emissions (metric tonnes)**	**Total Estimated Emissions by Silvicultural System (metric tonnes)**	**Net Sequestered Carbon (metric tonnes)**
Commercial Thinning & Sanitation/Salvage Units	512	-2.01	-1029	58,895
Wet Meadow/Wet Area Restoration Unit	14	-0.95	-13.3	-1106
Matrix Area Around Restoration Unit – No Harvest	150	0	0	27,464
Total Est. Project Emissions			-1042	
Net Project Sequestration				**85,253**

The Cal Fire Greenhouse Gas Calculator indicates the total project estimated emissions to be 1042 CO2 metric tonnes. However, when considered with the combined carbon sequestration of the project, the net project sequestration is 85,253 metric tonnes over the 100 year period. This sequestration is over 80 times greater than the net estimated project emissions. Hence, the overall carbon sequestration for the Northstar Enhancement THP significantly exceeds carbon loss. The implementation of this THP is not expected to hinder the State's ability to attain the goals identified in AB32, and as such will not cause a significant adverse impact in regards to the production of greenhouse gases.

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Cumulative Impacts of Emissions related to the Northstar Enhancement THP within the Assessment Area:
As disclosed in the Foreseeable Future Projects discussion, the Northstar Overall Mountain Master Plan (OMMP) is a programmatic planning document intended to guide balanced development and resource conservation within the resort's landholdings. The OMMP identifies planned on-mountain improvements, including upgrading and widening of existing ski trails, new ski lifts, and new/replaced ski trails, as well as infrastructure to accommodate these features, including on-mountain skier service facilities and upgrades, snowmaking facilities, utilities, and seasonal spur roads that are anticipated to be built over the next 20+ years. As shown on the AB 47 Foreseeable Future Project map, numerous OMMP ski trails and ski trail widening are planned within the resort. Left unmitigated, the timberland conversion associated with these planned activities could be expected to contribute to construction-related greenhouse gas emissions, as well as a reduction in future carbon sequestration due to tree removal.

Proposed trail clearing will occur in phases associated with individual ski pods within the resort during the next 20+ years. The bulk of the ski trail creation and widening will occur within Habitat Management Plan Zone B, which is held for intensive ski area development. Specific timing and location of build out of the OMMP ski trails is not yet known. However, impacts to greenhouse gas emissions related to future implementation of projects identified in the OMMP will be appropriately mitigated through application of the following mitigation measure for each project, as identified in the Northstar Mountain Master Plan Final Environmental Impact Report (State Clearinghouse No. 2012112020), under the jurisdiction of Placer County, and by a non-LTO contractor:

Mitigation Measure 16-1: Mitigate for Greenhouse Gas Impacts from Project Operation
The project applicant shall implement one or more of the following measures to reduce total new greenhouse gas (GHG) emissions associated with the project below 1,150 metric tons annually. To ensure this mitigation remains proportional to the individual impacts of the project, each phase of the development must demonstrate appropriate GHG reduction measures to offset the incremental increase in GHG production prior to approval of Improvement/Grading Plans for that phase. During review of Improvement/Grading Plans for each phase, the project applicant shall provide a report to the Placer County Planning Services Division that describes the suite of options selected to reduce GHG emissions and quantifies the specific reductions according to the California Emissions Estimator Model (CalEEMod) or other model accepted by the California Air Resources Board.

a. Measures to mitigate GHG emissions associated with the project may include the following:

i. Plant trees in areas appropriate for restoration or reforestation, such as reclaimed land or sites previously impacted by wildfires. In the Sierra Nevada, conifer species can sequester approximately 0.0367 metric tons of CO2e annually. As an example, the planting of 1,000 trees would sequester 734 metric tons of CO2e over a 20-year period. Assuming a construction time frame of 10 years and 1,000 trees planted annually, the result would be a total sequestration of 7,340 metric tons of CO2e over a 20-year period. In this manner, planting trees annually with each phase of development can offset some or all of the production of GHG emissions by the project. Since climate change is a global issue, not limited to a specific area or air basin, planting may occur on- or off-site provided the planting location is deemed appropriate by the US Forest Service (if forests are on federal lands), by the California Department of Forestry and Fire Protection (Cal Fire) (if forests are on state lands), or by a registered forester. A monitoring, maintenance and reporting plan shall be submitted for review and approval by the Planning Services Division and Placer County Air Pollution Control District prior to approval of Improvement/Grading Plans for each phase.

ii. Replace existing resort equipment and/or vehicles with newer or more efficient models to reduce water and/or energy consumption.

iii. Implement emission offsets as new technology becomes available and as determined acceptable by the Placer County Air Pollution Control District and Placer County.

iv. Increase usage of renewable energy sources.

v. Implement transportation management demand measures that decrease the number of vehicle trips to the site, including incentives for employee and guest carpooling, improved public transport, and increased employee housing.

vi. Exceed California minimum energy and water efficiency standards (Title 24, Part 6) in project facilities.

vii. Demonstrate increased carbon sequestration from implementation of forest management or habitat conservation/enhancement using practices such as those identified in the Northstar Habitat Management Plan and mitigation measure 6-9.

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b. Should the project applicant not demonstrate GHG emissions below 1,150 metric tons annually, as required, through item (a) above, prior to approval of the Improvement/Grading Plans for each phase of development, the project applicant shall purchase carbon offset credits that are (1) from the Climate Action Reserve (CAR) registry, CAPCOA GHG Reduction Exchange Program, or other similar entity as determined acceptable by the Placer County Air Pollution Control District (PCAPCD) and Placer County, and (2) quantified through an approved protocol by either the State of California or other similar entity and verified by a qualified verification body accredited by either the Climate Action Reserve or the State of California, or other similar entity as determined acceptable. These carbon credits would be used to offset both construction and operational GHG emissions of the project. Prior to purchase, the project applicant shall provide an analysis to Placer County and the PCAPCD for review and approval. This analysis shall include the project's estimated emissions, calculation methodology, and proposed offset purchase. The applicant shall submit either the purchase certification from CAR registry or verification certification issued by a qualified verification body for all carbon offset credits purchased. In either case, the certification received for payment of credit shall indicate that the emissions are "retired."

Emissions and required offsets associated with specific NMMP project components will utilize emission estimates provided in Draft EIR Tables 16 4, 16-5 and 16 6. The project applicant will provide documentation of compliance for review and approval by Placer County and the PCAPCD as a condition of final approval.

The compliance report required under this mitigation measure will include the following components:

1. *Calculation of the total annual emissions which is the sum of the emissions from the proposed phase/project component and any applicable remaining emissions from the previous phase/project component after compliance determination;*
2. *List of selected mitigation measures for the proposed phase/project component which have been or will be implemented before this proposed phase/project component is constructed;*
3. *Emission reduction calculation from selected mitigation measures (if the purchase of offset credits is selected, the total required credits will be calculated based on the portion of the lifetime for each phase/project component);*
4. *Documentation or certification if required by the selected mitigation measure;*
5. *Compliance determination to verify that remaining emissions for the proposed phase/project component do not exceed 1,150 MT/CO2e annually; and*
6. *Monitoring plan to ensure the accomplishment of the selected mitigation measures.*

Lesser amounts of OMMP ski trail creation and widening are planned outside of the resort core, within HMP Zones C, D, and E. Zone C is held for intensive recreation, yet Zones D and E are held, at least in part, for habitat conservation purposes. To ensure compliance with the objectives and targets for each zone, the OMMP provides mitigation measures to mitigate any loss of habitat in HMP Zones C, D, or E. These mitigation measures mandate a mitigation enhancement area at a 1:1 ratio of habitat loss to habitat enhancement. The habitat in the mitigation enhancement area shall be similar to the habitat where tree removal is conducted (i.e., conifer forest, late-seral forest, or riparian habitat) and shall occur in HMP Zone E in order to provide a large continuous habitat area. Demonstration of compliance with this mitigation measure shall be provided with the phased implementation of improvement plans, grading permits, and/or building permits for each project component that results in tree loss in HMP Zones C, D, or E, and will be under the jurisdiction of Placer County. The mitigation enhancement area shall also be protected from development with a conservation easement or similar mechanism.

Last, the assessment area contains over 7800 acres of timberland. The US Forest Service (USFS) and Northstar-At-Tahoe are the two largest landowners within the assessment area, comprising over 85% ownership of the assessment area. The assessment area specifically contains a significant portion of Northstar HMP Zones D and E. Management objectives of both entities include maintaining forested landscapes for wildlife habitat purposes. Review of the present, past, and foreseeable future projects indicates there is no significant anticipated decline or loss of carbon storage anticipated within the assessment area. From this analysis, it can be inferred that current carbon stocks will be maintained over time. It is reasonable to expect that forests within the assessment area will continue to sequester carbon at rates that significantly exceed non-biological emissions. As described above, significant adverse impacts regarding greenhouse gas emissions associated with the Northstar Enhancement THP's timber operations are not expected.